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A Study on Anthropometric Characteristics of Male Football and Volleyball Players aged between 18-25 years.

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Abstract

The aim of this study was to explore anthropometric characteristics of inter-college male Football (n=20) and Volleyball players (n=27) of Punjab having age ranging from 18 to 25 years and also to examine the anthropometric differences between them. Twelve anthropometric parameters were taken with standard instruments and standardized techniques. It was concluded from present study that football player having mean and standard deviation of body weight (63.8 ± 5.31 kg), height (173.17 ± 6.29 cm), sitting height (89.97 ± 2.69 cm), Upper arm girth (26.26 ± 2.08 cm), fore arm girth (24.01 ± 1.55 cm), thigh girth (50.79 ± 3.20 cm), calf girth (34.83 ± 1.66 cm), waist girth (77.68 ± 4.44 cm), Arm span (178.3 ± 8.46 cm), hand span (21.69 ± 1.50 cm) and foot length (24.9 ± 1.01 cm) respectively. For Volleyball players, Mean and SD values of anthropometric parameters like body weight, height, sitting height, Upper arm girth, fore arm girth, thigh girth, calf girth, waist girth, Arm span, hand span and foot length were found 63.24 ± 5.89 kg 176.85 ± 4.28 cm, 91.81 ± 2.38 , 84.84 ± 3.58 cm, 26.68 ± 1.92 cm, 25.42 ± 1.35 cm, 50.40 ± 3.09 cm, 33.71 ± 2.51 cm, and 75.91 ± 4.44 cm, 184.26 ± 6.87 cm, 24.30 ± 1.51 cm and 27.02 ± 1.15 cm respectively. On applying student's 't' test, body weight, leg length, upper arm girth, thigh girth, and waist girth were examined non-significant t test value between football and volleyball players. Body height and calf girth has shown significant differences at 5% level between football & volleyball players. Sitting height, fore arm girth, arm span, hand span and foot length were recorded highly significant 't' test values at 1% level between football and volleyball players. It was concluded from this study that anthropometric parameters have significant role for talent identification.

Keywords: Anthropometric parameters, Football players, Volleyball Players,

Introduction:

Anthropometric properties of athletes represent important prerequisite for successful presence at the same sport, effecting athlete's performance and are necessary in order to gain excellent performance of sports skills (Duncan et al 2006, Bayios et al, 2006, Ibrahim, 2010, Gualdi-Russo & Zaccagni, 2001). Volleyball, as one of the most amazing sports, includes fast movements, jumpings, landings and sudden shifts which need high power and strength for optimized performance (De Almeida, 2003). Physical structures of volleyball players are mainly assessed through measuring anthropometric parameters such as standing height, Body mass index and some other physical factors related to performance skills like jumping ability, agility, strength and endurance (Palao et al, 2007, Zhang, 2010). Football is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian footballers. Not many sports scientists have been attracted to examine the footballers in details because of the lack of adequate experimental models to study the games in the laboratory (Reilly et al, 1990). The game comprises activities like sprint and jumps in attack and defense. Football is a team game. Team games are sports where body size, shape, body composition and level of fitness, all play an important part in providing distinct advantages for specific playing positions particularly at the highest levels of performance, where there is a high degree of player specialization (Bale, 1986). Specific positional roles within each code may demand unique physique, physiological and physical fitness (Reilly et al., 1990).

Anthropometric & physical characteristics including: segment length, segment weight, overall height, overall weight, body type, body composition and physical fitness refers to maximum strength, explosive and reactive power, sprinting speed, low load and heavy load speed strength, special and specific strength unique to each individual.

Many Scientist has conducted anthropometric and somatotypic studies on various sports populations of National and International level (Tanner 1964; Sodhi and Sidhu,(1984), de Garry et.al.(1974),Carter et.al.,(1984) and Kang et al(2005). The main purpose of this study was to explore the selected anthropometric parameters of male inter-college football and volleyball players, which helps us to select children at early ages for talent identification and to make guidelines and counselling about their body type, body structure and body composition.

Material And Methods:

The present study was conducted on inter-college level male football (N=27) and Volleyball players (N=20) of Punjab from 20th September 2013 to 30th November 2013 during the course of Inter-college coaching camp held at Amritsar. Twelve anthropometric parameters like height, body weight, Sitting height, leg length, circumferences (like upper arm, fore arm, thigh and calf), arm span, hand span and foot length were taken with standard instruments and standardized techniques (Ross et al, 1980, Weiner and Lourie,1969). Appropriate statistic (Mean, SD, Range and Student't test) was used to analyse the data.

Results And Discussion:

Table-1 depicts anthropometric parameters of present study of male footballers. Mean body weight and SD were recorded 63.8 ±5.31kg having range values (upper and lower limit) of 72.60 kg to 55kg respectively. Average body height and SD were examined 173.17 ± 6.29, having maximum and minimum values 189.6cm and 156.8cm respectively. Mean sitting height and leg length were found 89.97 ± 2.69cm and 82.97±5.10cm respectively. Range values for sitting height and leg length were recorded 93.8 cm & 85.5cm and 95.8cm & 69.9cm respectively. Mean upper arm girth, fore arm girth, thigh girth, calf girth and waist girth were examined 26.26 ±2.08cm, 24.01 ±1.55cm, 50.79 ±3.20cm, 34.83 ±1.66cm, and 77.68 ±4.44cm respectively. Arm span, hand span and foot length were also recorded having mean values 178.3 ±8.46cm, 21.69 ±1.50cm and 24.9 ±1.01cm respectively as shown in table-1.

**Table-1
Mean, SD and Range values of Anthropometric parameters of interuniversity Footballers
(N=27)**

	Body Weight (kg)	Body Height (cm)	Sitting Height (cm)	Leg Length (cm)	Upper Arm Girth (cm)	Fore Arm Girth (cm)	Thigh Girth (cm)	Calf Girth (cm)	Waist Girth (cm)	Arm Span (cm)	Hand Span (cm)	Foot Length (cm)
Mean	63.80	173.17	89.97	82.97	26.26	24.01	50.79	34.83	77.68	178.3	21.69	24.9
SD	5.31	6.29	2.66	5.10	2.08	1.55	3.20	1.66	4.44	8.46	1.50	1.01
Maximum	72.60	189.60	93.80	95.80	30.40	27.3	56.50	38.8	86.60	194.0	25.2	27.1
Minimum	55.00	156.80	85.50	69.90	22.60	19.9	44.10	32.2	67.80	155.3	18.4	22.3

Table-2 depicts anthropometric parameters of present study male inter-college volleyball players.. Mean body weight and SD were 63.24 ±5.89kg having range values (upper and lower limit) of 70.55 kg to 48.50kg respectively. Average body height and SD were examined 176.85 ± 4.28cm having maximum and minimum values 186.80cm and 167.5cm respectively. Mean sitting height and leg length was found 91.81± 2.38cm and 84.84±3.58cm respectively. Mean upper arm girth, fore arm

Table-2Mean, SD and Range values of Anthropometric parameters of Inter-college Volleyball Players (N=20)

	Body Weight (kg)	Body Height (cm)	Sitting Height (cm)	Leg Length (cm)	Upper Arm Girth (cm)	Fore Arm Girth (cm)	Thigh Girth (cm)	Calf Girth (cm)	Waist Girth (cm)	Arm Span (cm)	Hand Span (cm)	Foot Length (cm)
Mean	63.24	176.85	91.81	84.84	26.68	25.42	50.40	33.71	75.91	184.26	24.30	27.02
SD	5.89	4.28	2.38	3.58	1.92	1.35	3.09	2.51	4.30	6.87	1.51	1.15
Maximum	70.55	186.80	96.50	90.80	29.60	27.30	56.30	38.50	82.00	197.20	27.20	29.70

Minimum	48.50	167.50	88.30	78.30	22.80	22.70	46.00	30.60	65.80	168.70	21.70	24.80
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girth, thigh girth, calf girth and waist girth were examined $26.68 \pm 1.92\text{cm}$, $25.42 \pm 1.35\text{cm}$, $50.40 \pm 3.09\text{cm}$, $33.71 \pm 2.51\text{cm}$, and $75.91 \pm 4.44\text{cm}$ respectively. Arm span, hand span and foot length were also recorded having mean values $184.26 \pm 6.87\text{cm}$, $24.30 \pm 1.51\text{cm}$ and $27.02 \pm 1.15\text{cm}$ respectively as shown in table-2.

Table-3: Student 't' test values of Anthropometric parameters of Inter-college Male Football and Volleyball Players

	Body Weight (kg)	Body Height (cm)	Sitting Height (cm)	Leg Length (cm)	Upper Arm Girth (cm)	Fore Arm Girth (cm)	Thigh Girth (cm)	Calf Girth (cm)	Waist Girth (cm)	Arm Span (cm)	Hand Span (cm)	Foot Length (cm)
Student 't' test Values	0.31	2.6*	2.73**	1.56	0.82	3.62**	0.47	2.05*	1.53	2.88**	6.56**	7.48**

* Significant at 5% Level (2.01), ** Significant at 1% level (2.67)

As shown in table-3, body weight, leg length, upper arm girth, thigh girth, and waist girth were examined non-significant t test value between football and volleyball players. It was observed that body height and calf girth has shown significant differences at 5% level between football & volleyball players and highly significant correlated at 1% level for sitting height, fore arm girth, arm span, hand span and foot length.

Conclusion:

From this study, it was concluded that: The Mean and SD values of Football players, body weight, height, sitting height, Upper arm girth, fore arm girth, thigh girth, calf girth, waist girth, Arm span, hand span and foot length were found $63.8 \pm 5.31\text{kg}$, $173.17 \pm 6.29\text{cm}$, $89.97 \pm 2.69\text{cm}$, $26.26 \pm 2.08\text{cm}$, $24.01 \pm 1.55\text{cm}$, $50.79 \pm 3.20\text{cm}$, $34.83 \pm 1.66\text{cm}$, and $77.68 \pm 4.44\text{cm}$, $178.3 \pm 8.46\text{cm}$, $21.69 \pm 1.50\text{cm}$ and $24.9 \pm 1.01\text{cm}$ respectively. The Mean and SD values of Volleyball players body weight, height, sitting height, Upper arm girth, fore arm girth, thigh girth, calf girth, waist girth, Arm span, hand span and foot length were $63.24 \pm 5.89\text{kg}$, $176.85 \pm 4.28\text{cm}$, 91.81 ± 2.38 , $84.84 \pm 3.58\text{cm}$, $26.68 \pm 1.92\text{cm}$, $25.42 \pm 1.35\text{cm}$, $50.40 \pm 3.09\text{cm}$, $33.71 \pm 2.51\text{cm}$, and $75.91 \pm 4.44\text{cm}$, $184.26 \pm 6.87\text{cm}$, $24.30 \pm 1.51\text{cm}$ and $27.02 \pm 1.15\text{cm}$ respectively. Body weight, leg length, upper arm girth, thigh girth, and waist girth were examined non-significant t test value between football and volleyball players. Body height and calf girth has shown significant differences at 5% level between football & volleyball players. Sitting height, fore arm girth, arm span, hand span and foot length were recorded highly significant 't' test values at 1% level between football and volleyball players.

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Comparison Of Speed And Agility Variables To High And Low Achievers Of Rdt Hockey Academy Players

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Introduction

Hockey is one of the most popular games in the world in general and India in particular. Hockey being most competitive sports, a player who is physically fit does not only enjoy more but he is also capable of using all the skills attained and mastered by him throughout, right from the beginning to the end of the game. The twin combination of both skills and physical fitness is indispensable for a player without either of which he will not be able to achieve much, specifically in order to play any ball game competently. Star player must have the stamina to run for at least three hours at a stretch, strength to execute the skills like hitting, pushing, scooping more forcibly, speed to run quickly with or without the ball, power to execute any skill with maximum force in minimum possible time as for trying in shooting circle and clearing the ball from dangerous zone, agility to rapidly change body position and direction like in tackling and dodging, balance the ability to maintain body equilibrium during vigorous movement like shooting on wrong foot and a player should have good reaction during stopping, tackling and in goal keeping as well.

Methodology

The study was proposed to compare RDT hockey academy male players of high and low achievers in terms of morph physiological and biomotor variables. To accomplish the purpose of the study, twenty nine (29) male youth field hockey players were selected at random as subjects, who volunteered to participate in this study. These players were randomly classified into two groups namely high and low achievers. The high achievers group constitutes of 17 players and low achievers group constitutes of 12 players. These players were selected from RDT Hockey Academy, Anantapur, Andhra Pradesh, India. These players were selected during the academic year 2015 – 2016. On average, the players had 4.9 ± 2.1 years of playing experience and represented different levels of competition and underwent regular morning training between 06:30 to 08:30 and evening practice between 16:30 to 18:30 regularly prior to the commencement of this study. Players remained passive for remaining hours. These subjects were accommodated in RDT Academy hostel, during the course of the study and similar diet was provided to all the subjects. These subjects go to bed between 22:00 to 22:30 and wakes up from bed between 05:30 to 06:00 hours. Prior to the study, the investigator ensured that all the subjects had a good understanding of the requirements. When verbal consent was obtained, the researcher in consultation with the subjects sketched a time schedule to incorporate the sampling schedule and exercise testing. Written consent was obtained prior to initial data collection,

Speed

Objective: The objective of this test is to determine acceleration and speed. Equipment required Measuring tape, stopwatch, cone markers, flat and clear surface of at least 50 meters.

Procedure

The test involves running a single maximum sprint over 30 metres, with the time recorded. A systematic warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements

are allowed. The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encouraged to continue running hard through the finish line.

Results

Two trials are allowed, and the best time is recorded to one-hundredth of a second. The timing starts from the first movement (if using a stopwatch) and finishes when the chest crosses the finish line.

Agility

Objective: This is a test of speed, body control and the ability to change direction (agility).

Equipment required: Marker cones, measurement tape, stopwatch, flat non-slip surface, 10 metres of distance is marked by two parallel lines of 5 metres each.

Procedure: The subject stands behind the starting line. On getting starting signal "GO" he runs faster, goes nearest to the other line and touches it with the one hand, turns and comes back to starting line, touches it with hand, turns and repeats it for a total of 5 times and 6th time runs over the line as fast as possible.

Scoring

The time taken by the performer to complete the course of 6 x 10 metres to the nearest 1/10th of a second is recorded as score of the test. Only one chance is given.

Table 1

Mean (sd) and results of ANOVA for speed among field hockey players classified by level of performance

Groups	Mean ± sd	SOV	Sum of square	df	Mean square	F ratio	P value
Total subjects (29)	4.97±0.24	B	.282	1	.282	5.178*	.031
High achievers (17)	4.89±0.24	W	1.468	27	.054		
Low achievers (12)	5.09±0.21	T	1.749	28	-		

SOV – Source of variance, B – Between groups, W – Within groups, T – Total

*Significant at 0.05 level of confidence

The mean value and standard deviation of high and low achievers on speed are 4.89±0.24 and 5.09±0.21 respectively. Levene's test has shown that the variance is not significant since $p = 0.606$.

Figure 1

Speed of high and low achievers field hockey players

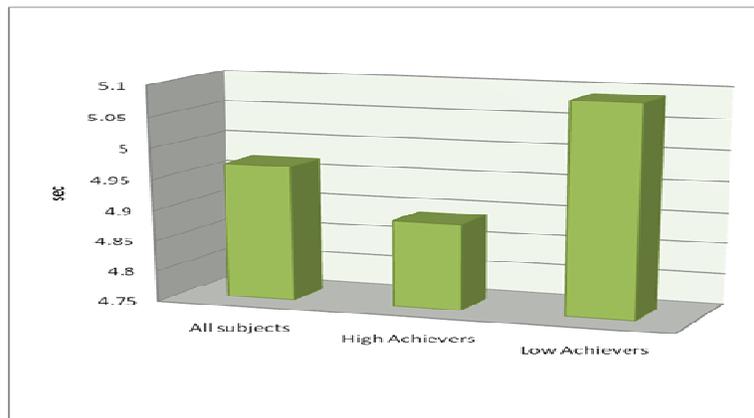


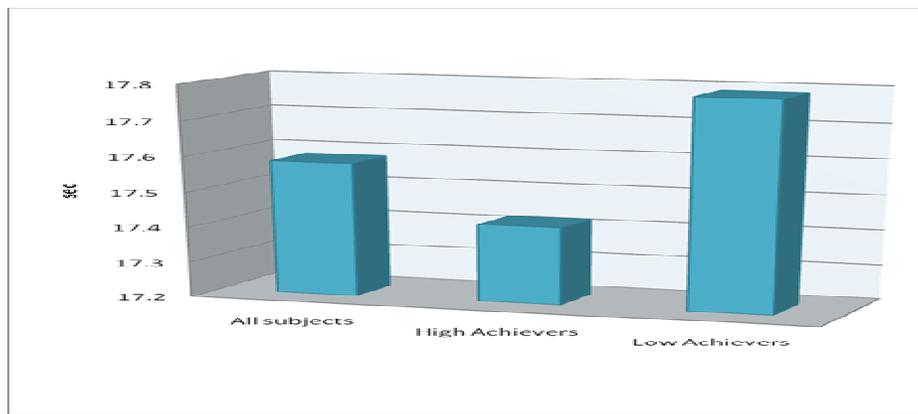
Table 2: Mean (sd) and results of ANOVA for agility among field hockey players classified by level of performance

Groups	Mean ± sd	SOV	Sum of square	df	Mean square	F ratio	P value
Total subjects (29)	17.58±0.99	B	.977	1	.977	.983	.330
High achievers (17)	17.42±0.98	W	26.846	27	.994		
Low achievers (12)	17.79±1.01	T	27.824	28	-		

SOV – Source of variance, B – Between groups, W – Within groups, T – Total

The mean value and standard deviation of high and low achievers on agility are 17.42±0.98 and 17.79±1.01 respectively. Levene’s test has shown that the variance is not significant since $p = 0.696$.

Figure 2: Agility of high and low achievers field hockey players



Conclusion:

The study was proposed to compare RDT hockey academy male players of high and low achievers in terms of morphophysiological and biomotor variables. To accomplish the purpose of the study, twenty nine (29) male youth field hockey players were selected at random as subjects, who volunteered to participate in this study. These players were classified into two groups namely high and low achievers. The high achievers group constitutes of 17 players and low achievers group constitutes of 12 players. High achievers subjects who represented highest level of competition and low achievers are immediately below high achievers level.

The high and low achievers youth hockey players has a significant difference in speed and agility

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The Benefits of Physical activities for chronic diseases:Review of Related Literature

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Abstract

Chronic diseases have become a focal point of public health worldwide with estimates of trillions of dollars in annual health care cost and causing more than 36 million deaths a year. Lifestyle factors such as physical inactivity are heavily correlated with the development of many chronic diseases. New strategies for primary and secondary disease prevention are desperately needed to aid in blunting the negative economic and social impact of these diseases. Physical activity (PA) and exercise are now considered principal interventions for use in primary and secondary prevention of chronic diseases. Currently, more emphasis in primary prevention of disease is necessary to reduce disease risk in youth and adults; however with chronic disease prevalence so high, similar emphasis is also necessary for secondary prevention in those children and adults already inflicted with chronic diseases. Conditions such as cardiovascular disease, type 2 diabetes, obesity, and cancer are drastically improved when PA and exercise are part of a medical management plan. In addition, the national PA guidelines in conjunction with PA promotion tools like Exercise is Medicine are needed to promote increased PA and exercise levels worldwide.

Keywords :-Chronic disease, Physical activity, cardiovascular diseases , type 2 diabetes etc

Introduction

Physical activity is widely recognized as a means for the primary prevention of chronic diseases as well as in patients' treatment and rehabilitation. Moreover, activity has beneficial effects on an individual's health and well-being. Despite the benefits of regular physical activity, the percentage of physically inactive adults in the world is high. Environmental and policy approaches aimed to increase physical activity require continual stress of the epidemiological evidence from studies investigating disease mechanisms as well as controlled clinical trials. Purpose Currently, five babies are born per second in the world, and these children can anticipate living longer than previous generations with a life expectancy of more than 69 years¹ which is approximately 6 years longer than the life expectancy of a mere 20 years ago. Even though children are expected to live longer, the quality of their lives is increasingly threatened by disease. Presently, chronic disease is the number one cause of death in the United States (U.S.) and the world. In the past century a dramatic shift from non-industrialized countries suffering from communicable diseases to industrialized/modernized countries burdened with chronic diseases has taken place. This shift continues in many areas of the world including some of the most heavily populated countries such as China and Brazil. The increase in chronic disease rates has created an enormous social, emotional, and economic burden that prevails throughout the world.

Objectives Of The Study

To identify the benefits of physical activities for chronic diseases

Review Of Literature

This paper the literatures which describe the topic. what is chronic diseases, CVD, Type 2 diabetes, cancer, obesity, stroke and physical activity are reviewed.

Physical activity, exercise and disease prevention

“Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level. Physical activity generally refers to the subset of physical activity that enhances health” The most prevalent chronic diseases are cardiovascular disease (CVD), cancer, type 2 diabetes, various respiratory diseases. These diseases are burdensome, debilitating and potentially lethal to individuals inflicted, and while debilitating, medical treatment and annual health care costs continue to rise into trillions of dollars each year. In the past, these diseases were associated with older populations, however because of lifestyle shifts, chronic diseases are now becoming more prominent in younger adults leaving them burdened and encumbered with health care concerns for the rest of their lives. One lifestyle shift that has been identified as being in part responsible for the earlier onset of chronic disease is the prevalence of physical inactivity. PA and exercise are considered a principal intervention for primary and secondary disease prevention..

Lifestyle factors such as physical inactivity are heavily correlated with the development of chronic disease. This relationship is supported by epidemiologic studies completed over the past century. Even though physical inactivity is not the only lifestyle factor associated with the development of chronic disease, this factor in recent years has received much interest. Initial investigations examining the relationship between PA and chronic disease development were performed in 1953 by Morris et al., who examined CVD risk in London's double-decker bus conductors and drivers. He found that the more active conductors were less likely to suffer from CVD than the inactive drivers. This work was ground-breaking and was the first major analysis showing long-term health benefits associated with PA and exercise.

The importance of PA and exercise in regards to improving health has slowly been propagated throughout the world, however even with this increased awareness, the world levels of PA over the past decade have remained unchanged and in a few settings even decreased. Some areas in the world have recorded sedentary behaviour (any PA that has an energy requirement of less than 1.5 METs) levels greater than 50% with countries like Australia and the U.S. recording the worse levels. Data reported from the National Health and Nutrition Examination Survey (NHANES) cohort indicate that on the average U.S. children and adults spend more than 55% of their waking hours as sedentary. Similar results are reported for Australian adults who spend 57% of their day as sedentary. Even countries that are typically thought of as more physically active are now reported as having higher levels of sedentary behavior.

As previously noted, chronic diseases are now the leading cause of death in the world and account for 63% of all deaths in the year 2010. Both epidemiological and longitudinal intervention evidence fully support the use of PA and exercise in the primary prevention of chronic disease. Though many countries are presently advocating for increased exercise and PA, these actions unfortunately have yet resulted in dramatic change. A more concerted effort involving all levels of the ecological and social framework is needed to fully embrace PA change.

Nevertheless, as PA and exercise provide many primary prevention health benefits, PA and exercise also provide similar benefits in secondary disease prevention. When PA and exercise are initiated after a chronic disease is diagnosed, many of the harmful disease effects are ameliorated and in some cases (e.g., type 2 diabetes) the disease progression is slowed or halted. PA and exercise when used as part of the medical management plan for secondary disease prevention will almost always improve the quality of life and potentially extend the life of a disease individual. In this regard, the benefits of PA and exercise depend on the type, severity, and comorbidities of the disease.

1.1 Cardiovascular disease

CVD is the most common chronic disease around the world. Approximately one-half of chronic disease deaths in 2010 were credited to CVD. The term cardiovascular disease includes coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis, and pulmonary embolism among others. With the exception of genetic cardiovascular disease, a high correlation exists among CVD and physical inactivity. This correlation was established over the course of several decades by epidemiologic studies designed to determine factors associated with CVD risk. These factors are characteristics that when present increase the possibility of being afflicted with disease. Numerous risk factors are identified for CVD and are divided into modifiable and non-modifiable risk factors. Modifiable risk

factors include elevated blood pressure, elevated blood cholesterol, elevated blood glucose levels, cigarette smoking, and obesity. Once PA, dietary, and smoking cessation interventions are addressed, the clinical manifestations are reduced. By knowing whether an individual has one or more of these factors, their CVD risk or risk stratification (low risk, moderate risk, or high risk) as outlined by the ACSM or the American Heart Association (AHA) is established. Risk stratification enhances the practitioner's ability to understand a patient's disease state and gives insight into potential disease progression. Once risk stratification is completed, the appropriate lifestyle modification interventions are identified and incorporated into a tailored medical management plan to reduce the risk of future cardiac events. The practitioner meets with the patient, reviews the plan, and gives counsel regarding various parts of the plan including lifestyle intervention.

Currently, the number of individuals around the world with CVD embodies the need for PA and exercise as a lifestyle intervention. Daily PA and exercise reduce CVD risk as well as signs and symptoms while increasing functional capacity. The 1995 guidelines produced by the Agency for Health Care Policy and Research (AHCPR) report that cardiovascular mortality is reduced in myocardial infarction patients who participate in secondary disease prevention such as comprehensive cardiac rehabilitation programming that includes PA and exercise. For all CVD, the quality of life is increased when medical programming includes PA and exercise training. Generally, individuals with CVD who become physically active realize multiple benefits including an improved functional capacity, improved muscular strength (when strength training is part of the rehabilitation program), reduction in sub maximal heart rate, reduced blood pressure, reduced rate pressure product, reduced inflammatory markers, relief of angina symptoms, possible decreases in body weight, and increases in high density lipoprotein cholesterol (HDL-C). Myocardial infarction patients enrolled into a 3–6-month cardiac rehabilitation program typically experience an 11%–36% increase in aerobic or functional capacity. This large range of values is due to variation in initial fitness level and the amount of PA and exercise completed. Increases in functional capacity provide for improving the ease to perform daily activities. The mechanism for this improvement is associated with the reduction in the amount of myocardial ischemia brought on by increased functional capacity.

Individuals diagnosed with CVD or having suffered a myocardial event should also receive educational information and counseling about the disease process and lifestyle intervention strategies in order to reduce the likelihood for further incidents. The 2008 U.S. PA Guidelines state that moderate PA is safe for almost everyone including those with chronic diseases. Although these guidelines do not provide a specific prescription for CVD individuals, they do point out that more health benefits are seen when the exercise volume or dose is increased from 150 min to 300 min a week. Other existing position statements and guidelines support this stance such as the Swedish PA in the Prevention and Treatment of Disease Guidelines. These Swedish guidelines give specific prescriptions for different manifestations of CVD. Other position statements such as the AHA/American College of Cardiology (ACC) 2006 guidelines for secondary prevention of CVD state that patients should achieve a minimum of 5 days a week of moderate intensity PA for 30 min a day. These guidelines and position statements are essential in providing information for medical management professionals on the use of PA and exercise for secondary prevention. When used correctly, PA and exercise prescriptions based off of these guidelines provide substantial health gains. Haennel and Lemire reported that CVD patients benefited with significant reductions in the incidence and had improved mortality rates when 30–60 min a day (most days of the week) of PA was completed. Leon et al. found that exercise-based cardiac rehabilitation programs reduced total mortality by 20%, cardiac mortality by 26%, nonfatal myocardial infarctions by 21%, and the need for percutaneous trans luminal coronary angioplasty (PTCA) by 19% when compared to the usual care control group. These secondary prevention disease improvements seen with PA and exercise in individuals with CVD are astounding and show that in many cases the detrimental effects of a lifetime of physical inactivity are blunted by comprehensive cardiac rehabilitation programming that includes increased PA and exercise.

Stroke

Stroke is when poor blood flow to the brain results in cell death. There are two main types of stroke: ischemic, due to lack of blood flow, and hemorrhagic, due to bleeding. They result in part of the brain not functioning properly. Signs and symptoms of a stroke may include an inability to move or feel on one side of the body, problems understanding or speaking, feeling like the world is spinning, or loss of vision to one side among others. Signs and symptoms often appear soon after the stroke has occurred. If symptoms last less than one or two hours it is known as a transient ischemic attack (TIA). Hemorrhagic strokes may also be associated with a severe headache. The symptoms of a stroke can be permanent. Long term complications may include pneumonia or loss of bladder control.

1.2.1 Cause of stroke

The main risk factor for stroke is high blood pressure. Other risk factors include tobacco smoking, obesity, high blood cholesterol, diabetes mellitus, previous TIA, and atrial fibrillation. An ischemic stroke is typically caused by blockage of a blood vessel. A hemorrhagic stroke is caused by bleeding either directly in to the brain or into the space surrounding the brain. Bleeding may occur due to a brain aneurysm. Diagnosis is typically with medical imaging such as a computerized axial tomography (CT) scan or magnetic resonance imaging (MRI) scan along with a physical exam. Other tests such as an electrocardiogram (ECG) and blood tests are done to determine terminal risk factors and rule out other possible causes. Low blood sugar may cause similar symptoms.

1.2.2 Prevention of stroke disease

Prevention includes decreasing risk factors as well as possibly aspirin, statins, surgery to open up the arteries to the brain in those with problem a ticnar rowing, and warfarin in those with a trial fibrillation. A stroke of ten requires emergency care. An ischemic stroke, if detected within three to four and half hours, may be treatable with medication that can break down the clot. Aspirin should be used. Some hemorrhagic strokes benefit from surgery.

Treatment to try recover lost function is called stroke rehabilitation and ideally takes place in a stroke unit; however, these are not available in much of the world.

Type 2 diabetes

The incidence of diabetes mellitus is on the rise throughout the world and is vying for the most common chronic disease. This rise is mostly due to escalating cases of type 2 diabetes. Shaw et al. in 2009 reported 24 million Americans had diabetes a sizeable fraction of the 285 million cases worldwide. In addition, 60% of Americans not diabetic were found to be prediabetic; a condition in which blood glucose levels are well above normal. Risk estimates for Americans born after the year 2000 show that these individuals have a 33% greater chance of becoming type 2 diabetic. Usually the onset of type 2 diabetes is associated with a decrease in life expectancy and an increased risk for developing other chronic disease such as CVD, but this disease process is heavily influenced by positive lifestyle change such as increased PA and exercise, and in some cases lifestyle change improves early mortality and morbidity rates. Nonetheless, increasing physical inactivity levels are related to the rising rates of type 2 diabetes. Presently, only 39% of type 2 diabetics reported meeting the level of PA recommended by the 2008 PA Guidelines, while 58% of healthy adults (not having type 2 diabetes) reported meeting the recommended level of PA. Because of the reported PA and exercise health benefits for type 2 diabetics, lifestyle interventions incorporating PA and exercise are important for both primary and secondary disease prevention.

A primary aim of the medical management plan for diabetics is to maintain optimal blood glucose, lipid, and blood pressure levels. When these three factors are properly maintained, abnormal physiological function returns to normal, and most symptoms and in some cases the entire diabetic disease process are ameliorated or postponed. Traditionally, aerobic exercise has been a cornerstone of secondary prevention for type 2 diabetics. One week of moderate to vigorous aerobic PA or exercise can positively change overall body insulin sensitivity. Increased insulin sensitivity is directly related to an increased expression of GLUT4 receptors which subsequently will increase glucose uptake. In addition to increased insulin sensitivity, skeletal muscle proteins and enzymes associated with glucose metabolism and insulin signaling and expression are increased. Regular PA and exercise also promote fat oxidation and muscle lipid storage that results in an increased fat oxidative capacity. Furthermore, increases in PA and exercise levels are a factor in weight reduction. Weight loss is associated with increases in HDL-C and significantly improves blood low-density-lipoprotein cholesterol and triglyceride levels. Lastly, PA and exercise have an important role in effecting co morbidities commonly seen with type 2 diabetes. Regular PA in most cases reduces systolic blood pressure but not in all cases while diastolic blood pressure is rarely lowered.

Type 2 diabetics are encouraged to participate in both structured and unstructured PA and exercise. Also, the 2008 Physical Activity Guidelines for Americans suggest that additional health benefits are gained by completing up to 5 h (300 min) of moderate to vigorous PA a week. Diabetics are a group of individuals that could receive these additional benefits from increased PA, and most guidelines suggest the inclusion of structured exercise programming as part of their medical management plan. Structured exercise is performed at least three times a week – preferably five or more times per week with no more than 2 days of rest between exercise sessions. This recommendation is based on the knowledge of the temporary nature of exercise-induced insulin effects. Health benefits and functional capacity improvements are best optimized with 5–7 days a week of regular PA and exercise. Though most diabetics gain health benefits from brisk walking at moderate exercise intensity levels, more beneficial effects are seen with higher exercise intensity levels. A recent meta-analysis found exercise intensity as the biggest determinant for blood glucose reduction in contrast to many who believe that

exercise volume as the better determinant. Even so, diabetics when starting to exercise or become more physically active are often limited by a low aerobic capacity (e.g., the average type 2 diabetic has an aerobic capacity of 22.4 mL/kg/min which is well below the average adult). As a result, the duration of each exercise session can be as short as 10 min, but with multiple daily 10-min segments (30 daily total minutes is recommended). When considering diabetes, regular PA and exercise provides the greatest impact when included as part of the medical management plan. If these programs were implemented as part of primary or secondary prevention programming, global spread of this disease would be slowed.

Obesity

Although obesity is not traditionally viewed as a chronic disease, it is heavily associated with negative health implications and is often linked to several chronic diseases including CVD, certain cancers, osteoarthritis, and type 2 diabetes. The link between obesity and chronic disease is associated with obese individuals having very low levels of cardio respiratory fitness and who are extremely physically inactive. Obesity rates are increasing throughout the world and in 2008 over 300 million individuals were viewed as obese. In the U.S. approximately one third of the population is considered obese giving this country the highest obesity rate in the world. Even so, countries once unaffected by the obesity blight are now experiencing substantial higher obesity rates. China, a country long not associated with high obesity has recently seen a dramatic spike in obesity along with an associated increase in hypertension, cancer, and type 2 diabetes. Even though the current rate of obesity in China (5%) is low relative to that found in the rest of the world (14%), the China obesity rate is increasing and is alarming.⁷ These rates changes have doubled over the past 10 years and are most disturbing because China's population makes up one-fifth of the world population. Such obesity rate increases for many countries pose serious implications for global health care cost.

Obesity is defined as a body mass index (BMI) excess of 30 and typically is a result of an improper balance of energy consumed and energy expended. When excess energy is consumed, the surplus is stored in adipose tissue. In addition, low levels of PA create a positive excess of energy exacerbating the imbalance causing an increase in storage of body fat.⁶ Surplus body fat can alter physiologic function to include decreased insulin sensitivity with rising fasting insulin levels and increased cholesterol synthesis. These negative health attributes are associated with increased levels of systemic inflammation, and a steady reduction in functional capacity. Some scientists believe that reduced functional capacity derived from low levels of PA in obese individuals is responsible for most of the negative health implications. Regardless, these factors are all linked to severe health concerns and chronic disease risk.

When the energy balance is tilted in the opposite direction, so that more calories are expended than consumed, obesity does not usually occur. Thus, lifestyles interventions incorporating PA and regular exercise are essential strategies for primary and secondary obesity prevention. Recent investigations provide interesting data strongly supporting the notion that physical inactivity increases the risk for obesity (odds ratio 3.9, 95% confidence interval 1.4–10.9). Nonetheless, small increases in daily PA and regular exercise by the youth of today can serve as an essential approach for primary disease prevention. Still, because obesity rates are high, daily PA and regular exercise remain an important component of secondary prevention programming. Because daily PA does aid in weight loss and ameliorates the physiologic dysfunction seen with obesity, guidelines from the National Heart, Lung, and Blood Institute encourage the use of PA and exercise to obtain a 10% weight reduction in overweight and obese individuals. This recommendation is supported by the substantial evidence demonstrating that a 3%–5% reduction in body weight can substantially improve health risks. Regardless of weight loss, daily PA improves an obese individual's functional capacity and their cardiorespiratory fitness while reducing their risk for chronic disease. In 2009 a position stand released by the ACSM recommends that at least 250 min of moderate to vigorous PA be completed each week by individuals who want to lose body fat. This recommendation is very similar to the 2008 U.S. PA Guidelines recommending 300 min each week to optimizing health benefits. While small amount of daily PA and exercise do provide health benefits, the amount of PA and exercise must be great enough to cause a negative energy balance to see reductions in body weight.

Cancer

During the past six decades, cancer prevalence has steadily increased to become the second leading cause of death in the world. Nearly 15% of all deaths are attributed to cancer while almost 600,000 deaths are attributed to cancer in the U.S. alone. In some countries including China, cancer has surpassed CVD in having the highest mortality rate. Recently, the Chinese National Bureau of Statistics estimated that approximately 25% of all Chinese deaths are cancer-related. Nevertheless, the World Health Organization estimates that over 30% of cancer cases are preventable by incorporating a lifestyle that includes PA and regular exercise. Presently, several types of cancer are

associated with physical inactivity while epidemiological studies report increased PA is associated with decreased risk for breast cancer, colon cancer, and prostate cancer.

Even as PA and exercise lifestyle interventions are recognized strategies for primary prevention, these same interventions improve survival rates and quality of life for individuals already suffering from disease. Thus, PA and exercise have been evaluated as a strategy in the secondary prevention for breast, colon, and prostate cancer. Most studies find improved mortality rates and quality of life when PA and exercise are incorporated into the medical management plan. Few properly designed studies are available evaluating the use of PA and exercise in secondary disease prevention for many forms of cancer. Thus, opportunities for future investigations exist in a variety of cancer areas. Regarding PA and breast cancer, Holmes et al. followed 2987 females diagnosed with breast cancer between 1984 and 1998 recording their PA levels. Women reaching at least 3 MET-h/week of PA had significantly higher survival rates relative to women achieving lower PA levels. In a similar study Holick et al. followed 4482 females diagnosed with breast cancer between 1988 and 2001 and recorded PA levels. Their data support the conclusion that women reaching a minimum of 2.8 MET-h/week of PA had significantly improved survival rates. Similar results are found for colon cancer and prostate cancer. Because of this information, PA and exercise must be incorporated as part of a comprehensive medical management plan. In those instances when these lifestyle interventions are included, survival rates and quality of life are greatly improved in individuals afflicted with several forms of cancer.

Conclusion

Recent evidence confirms previous findings that engaging in moderate physical activity is very important for the primary prevention of chronic diseases, decreasing all causes of mortality and that exercise is one of the determinants for physical and psychological well-being. The prevalence of chronic disease throughout the world has lead scientists and health professionals to consider various means of primary disease prevention and secondary disease treatment. Throughout the discussion presented in this manuscript, the importance of PA and exercise for primary and secondary disease prevention is reviewed. This notion is an essential concept found within the ACSM initiative Exercise is Medicine which promotes daily PA and exercise as a part of everyday life. Because of the many associated health benefits, PA and exercise should be viewed as a medication. As is the case for many chronic diseases, the health benefits of PA and exercise surpass those of conventional medications. Beta blockers commonly used in the treatment of hypertension and other cardiovascular diseases result in resting heart rate reductions that are comparable to reductions found with regular exercise participation. Because of these health benefits, PA and exercise are now included as part of the medical management plan for many chronic diseases. One of the most notable benefits of using PA and exercise is the absence of side-effects, as opposed to those found with classic medication use. Unlike traditional medications, PA and exercise change the underlying mechanisms for physiological functioning, whereas traditional medications mask the signs or symptoms or alter physiologic functioning in an unnatural fashion. Improvements in cardiovascular function seen with PA and exercise are excellent examples. Exercise causes increased myocardial oxygen supply, decreased myocardial oxygen demand, increased myocardium electrical stability, and overall improved myocardial function. This improved myocardial function is associated with decreases in other variables such as heart rate, systolic blood pressure and blood catecholamine levels at rest and all sub-maximal exercise levels. All of these changes contribute to a better functioning cardiovascular system and improved functional capacity. Physiological change brought on by PA and exercise is not limited to the cardiovascular system. In fact, all bodily systems are functionally altered and improved by PA and exercise. The realization of the importance of daily PA and regular exercise as a strategy in primary disease prevention has led many countries to develop national PA guidelines. In 1999, the Australian government in a move to improve overall health and reverse physical inactivity trends was the first government to develop national PA guidelines. The U.S. followed in 2008 when the Department of Health and Human Services announced and released the 2008 Physical Activity Guidelines for Americans. Following the U.S. lead, other countries including Canada, UK, Ireland, Austria, Finland, Sweden, and China each created their own national PA guidelines. The American guidelines reflect the dose-response relationship concept between volume of PA and exercise completed and health benefits achieved, and advise that health benefits are gained with 150 min/week, but that more health benefits are seen when 300 min of moderate PA is achieved.

Chronic diseases are the leading cause of death worldwide. Their incident rates continue to increase and this increase is heavily associated with an increase in physical inactivity. While obvious that more emphasis in primary prevention is necessary to reduce disease risk in youth and adults, similar emphasis is also necessary for secondary disease treatment in those children and adults already inflicted with chronic diseases. PA and exercise continue to gain recognition as important lifestyle

interventions for use in primary prevention and secondary prevention. Many countries have developed PA guidelines, and these guidelines in conjunction with PA promotion tools such as Exercise is Medicine are needed to educate health professionals on the importance of exercise in disease management. As more countries incorporate PA and exercise as part of primary and secondary prevention strategies, chronic diseases such as CVD, type 2 diabetes, stroke, cancer, and many others, along with their health care costs will be reduced while the quality of life is improved.

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Assessment of Selected Motor Fitness Components of Football and Hockey Players

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Abstract: The purpose of this study was to investigate the selected motor fitness components of male football and hockey players. The selected motor components were explosive leg strength, shoulder strength and agility. The present study was conducted on sixty male football and hockey players of Kurukshetra University. These players were selected through random sampling during intercollegiate championship. The required data for the study was collected by using Philip J.C.R. Motor fitness test. The statistical technique used were Mean, S.D. SED and 't' ratio to find out the significant differences between selected motor fitness components of football and hockey players. The results indicated significant difference in explosive leg strength and agility but no significant difference was found between shoulder strength of football and hockey players.

Key Words: Motor Fitness Components, Explosive strength, Agility

Introduction

Motor fitness refers to the ability of an athlete to perform successfully at their sport. The components of motor fitness are agility, balance, coordination, power and reaction ability. These motor components improve with practice & determine the level of athletic ability. These motor fitness components are as follows:

Agility is the ability to change course, controlling the direction and position to your body while maintaining your momentum Changing course while sprinting to hit a ball in hockey and football is an example of agility.

Balance: Ability to stabilise your body, whether standing still or maintaining motion.

Coordination describes the synchronization of your senses and your body parts in a way that enhances motor skills. Kicking ball in football is an example of leg-eye coordination.

Speed is the ability to move your body swiftly

Power is a combination of speed and muscular strength. A football linebacker uses power to blast through a line of men.

Reaction time: Reaction time measures how you interpret and then react to expected and unexpected events happening around you.

In football and hockey these components are used frequently specifically explosive leg strength agility and shoulder strength.

Methodology

Selection of Subjects: The sample of sixty male football and hockey players were selected through random sampling. Total sample of sixty players was divided into equal halves (Thirty male football and thirty hockey players). The data was collected during intercollegiate football and hockey championships.

Tools used: For collecting the data for this study Philip J.C.R. Motor fitness test was employed to test explosive strength of legs, shoulder strength and agility of football and hockey players. For measuring shoulder strength, explosive leg strength and agility: chin ups, vertical jump and shuttle run were used.

Statistical Techniques used: The statistical techniques used in this study are mean, SD, SED and 't' ratio. The level of significant was set of 0.05 level. The data was analysed by using SPSS version 20.0 according to objectives of the study.

Results and Discussion

The details of comparative mean, SD, SED and 't' ratio has been presented in table I, II, III.
 Table-I:Significance differences of Explosive strength of legs of male football and hockey players through vertical jump

	Football Players	Hockey Players
Mean	7.97	7.18
SD	1.79	1.69
SED	6.44	
t.value	1.79	
Significant at 0.5 level = 1.637		

Table I showed the significant difference of explosive strength of leg of football and hockey players. The mean value of football players is 7.97 and 7.18 of hockey players. The standard deviation of both team players was 1.79 and 1.69 respectively. The 't' test was 1.79 which was found significant at 0.5 level. It implies that football players have better explosive strength of legs than their counterpart hockey players.

Table-II:Significance differences of shoulder muscular strength of football and hockey players through chin ups

	Football Players	Hockey Players
Mean	6.60	6.55
SD	1.47	1.79
SED	0.42	
t.value	0.12	

Table II indicated the means scores of male football and hockey players is 6.60 & 6.55 respectively. The SD was found 1.47 and 1.79. The 't' value was found 0.12 which is not significant at 0.5 level. Thus it is concluded that there is no significant differences between football and hockey players on shoulder strength of motor fitness.

Table-III:Significant differences in Agility of Male football and hockey player through shuttle run

	Football Players	Hockey Players
Mean	27.3	22.7
SD	9.26	10.5
SED	2.55	
t.value	1.80	
Significant 0.5 level: 1.67		

Table III implied the mean stores of football and hockey players as 27.3 & 22.7. The SD of both team players was 9.26 and 10.5 respectively. The obtained 't' value 1.80 was found significant at 0.5 level. It means that there is significant difference in agility of both team players.

Conclusion

From the analysis of collected data and results obtained, following conclusion can be derived from the present study:Significant difference was found in explosive strength of legs between football and hockey players. Football players were found having greater explosive strength of legs than their counterpart hockey players.No significant difference was found between male football and hockey players on shoulder strength of Motor fitness.Significant differences were also found on agility between both the team players football players were found more agile than hockey players.

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Malaysian Football Coaches: The Key Challenges

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Abstract

Sport coaches have a crucial role in contributing to individual and team performance. Unlike the scientific study of athlete development, scant attention has been paid to the intricacies of coach development stages. In this study, the A, B and C licence coaches in Malaysia, were examined from the perspective of identifying critical issues and challenges the coaches are currently facing. This research was guided by principles of grounded theory (GT), (Strauss & Corbin, 1990). Grounded theory was selected because although it permits analytical techniques, it also enables a richer and deeper framework for understanding the complexity of development in the dynamic field of coaching development (Pellegrino, Chudowsky, & Glaser, 2001). Twelve participants were recruited based on the principles of theoretical sampling (Strauss & Corbin, 1990, 1998). Consequently, and eventually a cross section of "A", "B" and "C" licence coaches were recruited that adequately represented the various levels, from community, youth and senior. In-depth semi-structured interviews were used to explore how participants organised and understood their coaching experiences. A semi-structured interview guide was used with a recursive design whereby newly identified themes could be explored in subsequent interviews. Furthermore, probe questions were also used to explore ideographic themes and issues relevant to each interviewee. Initially data analysis involved creating electronic written transcripts of the participant's answer during the interviews. Following the principle of Strauss & Corbin's, (1990) GT, data construction, data deconstruction and data reconstruction stages was systematically conducted. As expected, a key result specific to this study was the identification of several key challenges faced by Malaysian football coaches throughout their development as a coach.

Key Words: Coaching, Coaches Development, Quality, Competency, Coaching Challenges etc

Introduction

Despite the high level of interest in football worldwide, the commitment of researchers to football coach development is not commensurate with the support invested in player development. That is, more resources are likely needed to support coaches in their important role. According to Mageau and Vallerand (2003), although football is increasingly popular and has a crucial role to play in developing players' performance, the support systems available are generally in place for the player not the coach.

Football coaching can be a fulfilling and rewarding vocation. Inherent in the coaching role, however, are many challenges and stressors. Football coaches face demanding schedules and time commitments, excessive workloads, conflicting roles and the pressure to win and cope with defeat. According to Surujlal and Nguyen (2011) football coaches face a number of challenges, frustrations, conflicts and tensions, the enormity of which is often underestimated. McNamara (2001) suggested that, the 'chaotic lifestyle' includes travel, regular dislocation from family and friends, long undefined hours, limited time for oneself; and lack of job security. McNamara also stated that the complex and extra ordinary demands placed on coaches also stem from having to perform multiple roles including: educator, motivator, counsellor, advisor, trainer, manager and administrator. According to Anshel (2003) the coach role may include being a leader, follower, teacher, role model, limit setter, counsellor and mentor. Coaches are also consistently tested, as they are responsible for athletes and their performance (Wynd, 2007). Sport coaches seek to provide conditions through which each athlete can obtain maximum success (Fatemeh, Rahim, Mohamad & Anoushiravan, 2010). Consequently, coaches are responsible for developing the athletes' mental, physical, technical and tactical abilities (Becker, 2009).

Researchers investigating coaching effectiveness almost universally report that coaches greatly influence an athlete's performance, behaviour, and emotional well-being (e.g., Andrew, 2009; Chelladurai, 1990). The extent of this influence goes beyond the sport's environment to other areas of an athlete's life. According to Baric (2007) the coach is a central contributor to the development and progress of athletes. Regardless of the level of knowledge and skill of the coach, it is the application of knowledge that constitutes excellent practice (Matt & Christopher, 2006). Since coaches affect not only their athletes' physical performance but also their psychosocial well-being, an effective coach must be attuned to the personal and individual needs of athletes. To coach effectively, a coach must utilise different types of knowledge in solving problems and making effective decisions (Nash & Sproule, 2011). Collectively, coaches not only are charged with the responsibility of producing results at the professional level but also play a central role in fostering the "social capital" and healthy living at the grassroots and community levels (Nathan, Birourre, Evers, Mackenzie & Henly, 2010). Nathan et al., asserted, the coach is vital at the community level because sport can be a mechanism to promote social cohesion, encourage strong community bonds, and to access positive mentors.

One of the areas for improvement identified in football coaching in Malaysian is the lack of the clear development pathways for coaches especially at the grassroots level. Furthermore, according to Lavalley, (2006) because coaching has not yet been recognised as a profession, the continuing professional development and career pathways are limited in both implementation and effectiveness. The apparent lack of a defined career pathway and professional recognition could affect the selection, employment and deployment of potential coaches. If coaching is to become a professional career, a more appropriate instrument for evaluating coaching competence and performance is possibly needed (Mallett & Côté, 2006). If coaching is to be considered or accepted as a profession there needs to be an established base of knowledge that all coaches possess, knowledge or understanding that coaches require across a number of domains (Gilbert & Trudel, 2005).

Arguably, leading researchers, sporting organisation and sport's National Governing Bodies (NGB) need to work together to provide a rounded and well informed view of sport development processes (including the challenges they faced) to enhance the development and hence, proficiency of coaches generally. According to Giges, Petitpas and Vernacchia, (2004) sports coaching researchers could inform coach education coordinators regarding the challenges faced by the developing coach. Researchers investigating coaches' challenges and needs have found that coaches often perform under pressure, are subject to intense public scrutiny, and held to incredibly high expectations. Giges et al. stated that coaches often need consultation services to assist them in increasing awareness of their own needs and helping them to learn strategies to overcome barriers that inhibit their ability to achieve their desired outcomes. Despite the published research findings relating to the importance of coaches in society, scant attention has been given, at least scientifically, to how coaches develop over their career and challenges they faced.

Method

Participants.

The participants were 12 male football coaches in Malaysia ranging from 26 to 52 years of age. Four "A" licence, four "B" licence and four "C" licence coaches were recruited. All 12 coaches were active in coaching at different levels at the time of the data collection with coaching experience ranging from 5 to 30 years. In terms of current working experience, all four "A" license coaches were employed fulltime, one with a national youth team, one with a professional team, one with an elite youth development programme and one with an international club. One of the "B" license coach was working fulltime with a private football academy and the other three were coaching and teaching at schools or working in the private sector and were essentially part-time coaches. All four C license coaches were part-time coaches.

Procedures.

Permission to conduct the research was obtained from the Football Association of Malaysia. In identifying potential participants, a letter was to the Football Association of Malaysia (FAM) secretary general to seek approval to conduct this research and to obtain the Asian Football Confederation (AFC) and FAM list of accredited coaches. The letter detailed the purpose of the study and requested permission to provide coaches with information about the study and request their participation. Once permission to contact coaches was approved, coaches were then invited to participate after learning about the purpose, risks, and safeguards of the study. All of the individuals who were recommended by the FAM secretary general agreed to be interviewed. Only 12 participants were, however, were interviewed.

Interviews

The data collection for this study was conducted in Malaysia. Once coaches agreed to participate, times for face-to-face interviews were arranged at mutually convenient locations. This study was also conducted during the Malaysian Schools National Championship where interviews were organized with many of the participants in an efficient and cost-effective manner. Participants were given information, and immediately prior to the interviews they were reminded of the purpose of the study, the risks, safeguards and were given an opportunity to ask questions. In addition they were offered opportunities to review the interview guide before participating. All the respondents consented to the interviews being digitally recorded and transcribed. Interviews followed a guide, ranging in length from 45 to 90 minutes. The interview guide consisted of questions focused on delineating the challenges they face throughout their career development in Malaysia. The interviews were then transcribed verbatim and analyzed using Grounded Theory (GT) methodology (Strauss & Corbin, 1998).

Data Analysis

As mentioned earlier, this research was guided by principles of grounded theory (GT), (Strauss & Corbin, 1990). Grounded theory was selected because although it permits analytical techniques, it also enables a richer and deeper framework for understanding the complexity of development in the dynamic field of coaching development (Pellegrino, Chudowsky, & Glaser, 2001). Coding and conceptualizing.

Following the Strauss and Corbin (1998) approach to data analysis, open coding, axial coding and selective coding techniques were used. According to Strauss and Corbin, a code is a concept, often reduced to a word that signifies what is essentially going on with a piece of data. Whereas, coding is the analytic process of examining data line by line or paragraph by paragraph for significant events, experiences, and feelings that are denoted as concepts.

Open coding

More than 2,000 codes were identified in this study using the open coding procedure. For open coding, at the initial stage of this study, microanalysis of the interview transcripts was carried out, with line-by-line analysis to identify potential themes and concepts in the data. An open code was given to significant events, feelings and experiences denoted by the participants, for example "match - fixing".

Axial coding

Axial coding is "a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories." Following the procedures recommended by Strauss and Corbin (1998), the central category, linking all the categories through a relationship statement using the selective coding procedure was later identified.

Selective coding

Selective coding was carried out after determining what was essentially the core variable. The core provides a clue to explain the behavior of the participants in resolving their main concerns. Selective coding was also used here to delimit the study and effectively speed up the analysis. This is encouraged for Grounded theory (Glaser, 1998) since GT is not focused on data accuracy per se as in descriptive research. Rather GT is about generating concepts that are abstract in terms of time, place and people.

Results: The challenges

Match fixing.

According to the coaches involved in this study, one of the challenges that they face collectively as coaches is match fixing. One of the participants mentioned that the match fixing "disease" is currently widespread in Malaysia. According to coach A1, an effort by the football governing body worth millions of ringgit will not reach its objective because of the match fixing activities. He later added that only education of the younger generation of players can be used to overcome this challenge, "There has been an issue of coaches being involved in match fixing that is not good for the game". He further mentioned the consequences caused by match fixing activities as, "Clubs and National associations spend millions of ringgit to develop players from a young age just to lose them to match fixers. Though not all, but just a few is enough to spoil the lot".

According to another Malaysian "A" license (A3) coach, the year he became involved in coaching at the senior level was not a very good one because of the corruption (match fixing). According to him, he was not involved and the authorities of the team manage to get those who were involved, but sadly he was eventually stopped from doing coaching because of this association, "But the year was not very good because of the match fixing, players selling games, I was out of the way of those things, in fact I do not know why it was going on like that".

Coach B2 also stressed that in the year [year deleted] when he coached one of the [name deleted] league teams he observed numerous bookies fixing hanging around the team and they even offered

him to take a bribe to fix the result of a game. Fortunately, he refused, and as a consequence he was warned by the bookies, "A lot of bookies offered me which I don't want. I turned them out. When I turned them out, they called me, they warned me...football has become like gambling".

Cultural

Coaches also thought that football culture as key challenge that has the potential to sully their coaching career and football development in general. The type of cultural issues embodied within the football community in Malaysia was mentioned constantly by almost all participants in this study. Coach A1 summed up this sentiment; "We want young players to be exposed and learn football, do not give importance to results, but the politicians who lead the football association say results are important, they are interested in short term results". Coach A1 further expressed his belief that; "Culture and mentality, makes one nation better than another, that's why we need our young players to ply their trade in Europe to become better players". Coach A1 agreed with the challenge given by the characterization of the local football culture in Malaysia based on his experiences as a coach. He highlighted the cultural challenges that impeded his development over his coaching career, "Most people do not have the patience to allow learning and adaptation to take place. People expect instant results which seems to me to be an important challenge".

Other aspects of the challenge faced by coaches was around the theme of education(cultural) with Coach A2 reflecting; "...especially the football coaches association to learn from European football culture". Coach A3 considered that; "Because the administration is always changing...they have different ideas, they don't have the same way of thinking, short term, and I think that is some of barriers and deficiencies". Coach C2 supposed, "The lack of football equipment and facilities in the rural areas compared to the city area". It means that the distribution of the football resources is not balanced between urban and rural areas, causing the unequal opportunities between communities regarding football training, match and football development pathways.

Despite the widespread awareness of problems within the local football cultural the majority of coaches did not view this necessarily as an impediment. One of the coaches (B1) made the point; "If we want to become a good coach, we have to survive by ourselves because nobody is helping us". Football culture was seen as the culprit for many difficulties and poor outcomes and some coaches expressed their views in forthright terms. For example, coach B1 further declared that, "the main problem for me is the lack of resources. I have written a lot of letters to a certain company to ask for sponsorship, but I get frustrated because they are not helping". Coach C1, declared that, "Here in Malaysia we have not had a world champion. Now that situation must change, the mentality, the attitude, the thinking of the community, the parents, everything". Interestingly, all of the coaches in this study identified perceived problems with the football culture.

Football coach education curriculum

Coaches did raise some questions regarding the value of the current coaching education provision, especially the football coach education curriculum in terms of how it related to their current role as coaches of players from the grassroots to the senior level. The majority of coaches involved in this study questioned the football coach education curriculum and generally it did not meet their expectations. Most of the coaches especially those with "B" and "C" licenses expressed how they believed the curriculum alone did not produce quality personnel. According to those coaches, this situation occurs because most of the coaches have not been exposed sufficiently to the sports sciences in the curriculum. Even some of the coaches with the highest FAM qualification could not express their understanding beyond a limited view as A2 demonstrated; "We don't have the people... we don't produce... knowledgeable coaches. Maybe our coaching curriculum has to be revised and to be more scientific. The scientific aspect of the training must be there. I think that this aspect is still lacking among Malaysian coaches". However, Coach A2 was optimistic that the next generation of coaches may bridge this gap in knowledge; "Our players from sports schools, these boys are coming out and some of them are going to university taking up other levels of education. Maybe this group can change the football coaching scenario in the country". Similarly, Coach A2 was also able to relate the challenge that football coaches were facing and the lack of supervision of the club and the coaches who run their own football lessons without applying the curriculum set by the FAM. "Now we have the trend, the coaches going into age group training. The Under 12 has their own training programmed throughout the country and FAM knows about it, but there is no supervision for quality control".

Coach A2 had stronger views concerning the challenges related to football coach education and his knowledge on this subject matter was relatively deep; "What we can conclude is that we must have a knowledgeable coaching culture widespread throughout our country". Coaches at the "C" license stage also had similar beliefs and this was expressed when they were asked to explain their challenges in football coaching. The sentiment among the "C" license coaches, for example was that,

“One of the common challenges is to get involved with the state association so we have to get to know somebody inside. It’s not about testimony and it’s not about opportunity. It is about who you know and not what you know”.

Competence of assistant coaches

According to the coaches involved in this study, the coaching job has now becoming more and more complicated. For example, nowadays they are responsible for the welfare of the players, scheduling and liaising with the governing body apart from their prime job to plan and execute the training sessions. The head coaches expressed the need to have someone to rely on as an assistant. There were mixed feelings, however, especially from the “A” license group of coaches as to whether there was sufficient reliable personnel to be appointed as their assistant and whether the coach education courses had achieved the aim to produce such assistants. Coach A3 thought that “The greatest barrier and deficiency I would say is unqualified personnel handling the teams, they kill the interest of most of the beginner coaches. Secondly, they do damage to the players with their small amount of knowledge”. Coach A4, had the same perspective in his effort to look for a reliable successor for his current coaching position, “I like to have people who are equivalent or can be better than me as an educator. I am still looking for one or a few who can be better than me to train them up but I cannot find any one suitable”. Coach A4 also expressed strong views concerning the lack of reliable assistants to delegate tasks; “I am getting old, so my challenges are still to find someone to take over, someone who is willing to spend time to work, to work with me, to understand the work and he must have the same qualities that I have”. Coach B1 felt there are, “Young and new coaches going into the game without knowledge. Some of them working were as a clerk and tomorrow they become an under 18 coach.... I think something is wrong”.

Lack of job security

Almost all coaches involved in this study related their unwillingness to commit to football coaching as their fulltime permanent career even though they often wished it. Many coaches choose to perform their coaching as a part time job because of their love for the game but were mindful of their responsibility that “they need to pay the bills”. Coach A1 outlined his opinion, saying that, “Frequent sacking of coaches hinders development of coaching as people are afraid to venture into something that is not consistent and long lasting”. Furthermore, Coach A1 stated his view of the short term appointment approach of the clubs. He mentioned that those who have the power in the club often make decisions as they please and the coach may be victimized; “It may be a profession in Europe but it is not really yet in Malaysia. Short term appointments and no definition of coaching as a profession, suggests that coaches can easily get the sack if they have a crazy owner who does not understand football”.

Some of these coaches admitted that they were not always able to plan their future career in football coaching because there were not many vacancies. Coach A2 acknowledged that; “We don’t have so many teams. In the professional league we have only 12 professional leagues at the upper level and then next level maybe 30 teams, so we need 30 coaches only. So where do the other coaches go?” Coach A3 took this view even further, disclosing within his coaching environment and experience, he had no real control over his coaching career; “There is no security, if you want to coach full time, you have to think of so many things, family and financial constraints. That’s why I told you there is no security”. Coach A3 also disclosed that, “I’m not feeling secure there is too much emphasis on success on a short term basis, it’s very tempting but very dangerous”.

When coaches are not secure about their coaching career or not given the opportunity to carry out their duties with certainty, they will question the rationale behind the plan to turn to coaching full time employment. Coach C2 disclosed that, “I think football coaching to me is not well recognized, maybe it is well recognized especially at the senior stage but not at the grassroots stage which is under privileged”. Coach C3 thought that the problem in securing a permanent job as a coach was more difficult compared to any other job even though a person may have all the qualifications at the tertiary education level or even in football coaching courses. “You get a one year contract to train a particular club and, if you are not doing well, not performing well, you will be sacked, your contract will not be renewed and you will jobless for another two or three years”.

Unclear pathway / limited opportunities

In addition to the subject of no security in a football coaching career, the coaches in Malaysia also suffer from the absence of pathways. Coach B1 felt; “There are three things. We need more recognition, we need to have honesty and we need to put in a lot of hard work”. Coaches also reported how they were not aware of the pathways to become a full-time football coaches. Coach B2 stressed the point that, “I need support from all those who are involved in football. These are the challenges as I need to develop, improve my knowledge and experience”. Coach B2 later added that coaches feel reluctant to become full time coaches even though they would love to, because there are

very limited opportunities around as he stated that, "The chances to become a professional coach here are limited as the culture and people here find it difficult to have confidence. I realise that to become a full time professional is not easy. The chances are very limited". According to coach C1 he cannot give his full commitment, and only manages to do coaching on a part time basis because he is also a teacher at a government school. He stated, "I'm a full time teacher. This coaching I'm doing as part time, and because of that, I cannot give full commitment. Maybe it is how I am stuck which does not allow me to go for further, to do better for football". Coach C3 described the same situation, as he mentioned that over the last five years he has found out that there are not many teams to coach and the old generation of coaches before him had to struggle, as he mentioned, "If you ask the senior coaches, they had to struggle because before... some 5 years back we don't have enough teams".

Football governing body management system

The existence of Football Association of Malaysia (FAM) is to help foster the development of football. Linked to fulfilling this goal is to understand what coaches need. This awareness is important, in order to support them in their development and foster the game. Ironically, according to a number of coaches in this study, one of the challenges they face, is working within the management system of FAM itself. For example, coach B1 felt; "Most of the coaches and management in Malaysia, they just talk more than do their work. They seem to talk without thinking, and overrule most of the coaches but our coaches have very back dated knowledge". In addition, Coach B1 stressed the point about what the FAM counterpart in (Name of the country deleted) and (Name of the country deleted) has been doing is their development programs... He later added, "(Name of the country deleted) spends a lot of time to do research and development. From there they changed to be better". Coach B1 further stated that FAM should be responsible for the development of the coaches, saying that "FAM concentrates on only a few players in national sports schools and does not concentrate on the rest of the players nationwide". Coach B1 also felt there was unequal treatment of prospective coaches by FAM in commenting that FAM were in favour of passing the national ex-players in getting the coaching license as compared to non-national trainee coaches no matter how hard they have worked to get a license.

Coach B1 suggested that the development of the coaches should not be done by FAM itself but rather advocated outsourcing training off shore; "Now we are having a very big, big problem in our football. Malaysia must send coaches to (Name of the country deleted) for a course, to learn football there". Coach B1 shared his experience in one of the best football clubs in the world and expressed the view that FAM should learn from what is practiced in Europe, for example in terms of diet and nutrition of the players. He mentioned that from his experience it [club name deleted], he found that; "the coaching, principals of training, the drills it was a very high level even at the age of 12, 13, 14, 16 until the age of 20...the method of training was different". Many coaches in this study also considered a development officer or FAM personnel to be the ideal to help develop the coaches broadly

Some coaches were insistent that improvements and changes need to be generated from the grassroots levels first. Coach C3 that; "Football starts from schools. But they don't believe it now. I don't know why. To me we need more leagues, competitive leagues during school time. That's the most important thing. I played at least 30 games a year during my school time". Coach C3 coach further reinforced this view;

Coach C4 had very strong views concerning the adequacy of FGB management systems, stating that FAM is not really development coaches sufficiently, and promoting coaching as a good profession in Malaysia. He also mentioned that one of the obstacles he has to deal with is bureaucracy and double standards as follows, "Because people do not know or like you, they can make you fail in the course, not because of your ability...you are not going to have your coaching license". In the opinion of coach C4 coaching is so isolated from the mainstream community, and coaching is not popular There was a general view that FAM must develop change initiatives if Malaysia is to compete at the Olympics, or even the Asia games. Coach C4 suggested that FAM should hire someone to lead and draft policy. Coach C4 also held the view that, "most parents want their children to play football and are a positive market for the coaching profession but it needs to start from FAM".

Conclusion

All in all, match fixing, cultural aspects, football coach education curriculum, football governing body management system, unclear pathway / limited opportunities, job security, no reliable assistant to delegate tasks are the main challenges that emerged from the data collected from the participants in this study. It is readily apparent that Malaysian coaches want to see changes, especially in the coaching education curriculum and the management system of the governing body, as top priorities. Also, they believe that the coach education system and football cultural aspects must provide the competent younger coaches to succeed them.

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The Relationship Between Anxiety And Sporting Achievements Of Students At Danang University

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Abstract:

Sport is one of the most important activities to improve human's health. At universities, apart from taking physical education courses, students also participate in sports tournaments at different levels ranging from university tournaments, i.e. the Faculty of Physical Education, or the University of Danang, its member universities and colleges, to national and regional ones. Soccer, volleyball, and badminton were found to be among the most popular sporting activities to be organized frequently in school tournaments. Yet, upon joining such activities, most students fell stressful and anxious. To evaluate the relationship between anxiety and sporting achievements of undergraduate contestants, we employed research methods of questionnaires, in-depth interview and Zung Self-rating Anxiety Scale on 164 students and 24 coaches. The results indicated that if a student felt anxious before tournaments, his competing spirit and sporting achievement would suffer negatively. Accordingly, this paper proposed some solutions to reduce anxiety for undergraduate competitors such as proper training time; healthy diet, stress relief, using protective wear for leg, arm, and head, consulting technical coach and especially psychological counselor before joining sport competitions. Keywords: student, coach; competitions; anxiety; achievement.

1.Introduction

The science of sport worldwide has done a variety of studies on measures to improving sport performance related to nutrition, training, protective wear (head, arm, leg, etc.), award, and insurance [1, 2, 5]. In Vietnam, in recent years, universities all over the country have paid significant attention to improving quality of sport learning and competition to help shape the love for sport and minimize sport injuries for student-athletes. At the University of Danang, a number of initiatives have been proposed to enhancing students' love for physical education and sport competition. This paper studies whether anxiety of students influenced their sport performance, thus proposes some solutions to reduce levels of anxiety of students and improve their sport performance. Accordingly, some solutions to improve students' sport performance and reduce anxiety are: paying little attention to achievement and prizes; increasing training time; having a technical coach, a healthy diet and stress relief; head, leg and arm protective wear; and especially seeing a psychological counselor before joining in sport competition. Research methodology and sample.

Research sample: The sample of this research was 164 students and 24 coaches. They were asked to fill out a survey with questions related to levels of anxiety of students about sport competition at Danang University; causes and signs; effects of anxiety and solutions to minimize their anxiety levels.

Research methodology: The research methods employed in this study include: (1) questionnaires; in-depth interview; and (3) Zung Self-rating Anxiety Scale which is standardized for clinical psychology. The collected data was analyzed with software SPSS version 18.0. The Cronbach's alpha of all data analysis was $\geq 80\%$, in which the Cronbach's alpha for anxiety scored 93.2%.

3. Research findings

3.1. Levels of anxiety of student-athletes in sport competition

Upon using the Zung Self-rating Anxiety Scale to determine levels of anxiety of student-athletes, the results showed that 71.4% respondents felt anxious most of the time while the figures of those feeling anxious a little of the time and good part of the time scored equally with 14.3% [3]. These figures indicated that psychological health of student-athletes before a sport competition was not good. Also, 93.2% respondents said that they felt nervous at their performance in the upcoming competition, while the rest 6.8% said that they felt little nervous because they knew in advance that they would not get any prizes at all. Considering the relationship between anxiety and sporting achievements, the questionnaire participants agreed that having a bad mood would affect negatively one's sport achievement.

In addition, as we surveyed coaches about their student-athletes' levels of anxiety, we found that their answers were interestingly similar: 71.4% student respondents said they felt anxious most of the time while their coaches reckoned that 76.2% of their students felt anxious most of the time [4]. In this sense, the coaches really understand their student-athletes' feelings.

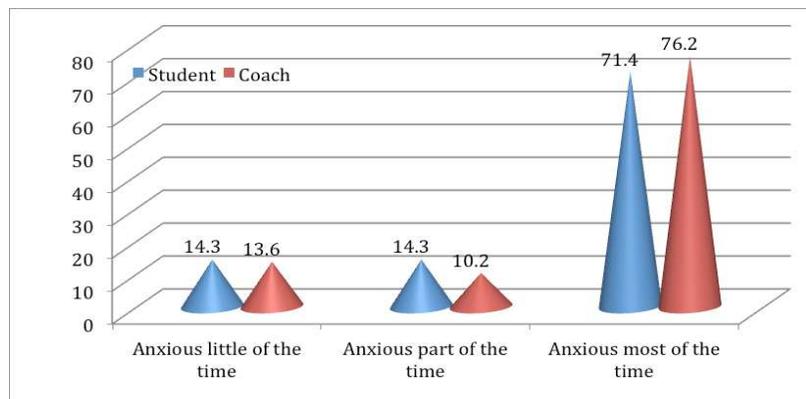


Figure 1: Levels of anxiety of student-athletes in sport competition

3.2. Expressions of anxiety of student-athletes

The data related to physiological expressions scored the highest significance averaging at 2.31/4, followed by cognitive, behavioral and emotional expressions. Negative physiological expressions include: headache, tiresome (with average at 2.29); hand and leg shaking and trembling (with average at 2.09); heart beating fast (with average at 2.19); feeling hard to sleep (with average at 2.12); lost appetite (with average at 1.89). Negative cognitive expressions include: upset (with average at 2.11); thinking too much (with average at 1.86); feeling hard to concentrate; having bad dreams; nervous about the future; shortening memory span; decreasing learning efficiency; etc. The response of students and coaches were similar in terms of physiological expressions (headache, tiresome, leg and hand shaking and trembling, etc.)

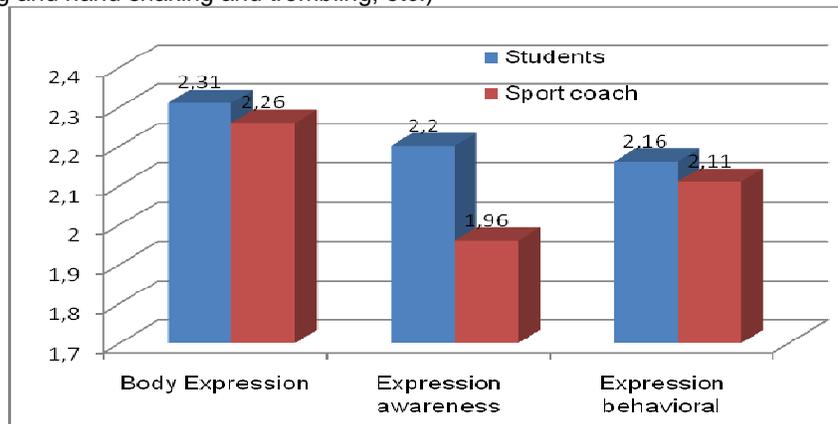


Figure 2: Physiological, cognitive, and behavioral expressions of anxiety

The following table represents the similar sense of students and their coaches about student-athletes feeling tired in sport competition.

Table 1: Expressions of student-athletes in sport competition

No.	Expressions of student-athletes in sport competition	Average scores	
		Students	Coaches
	Feeling hard to concentrate in training	2.15	3.02
	Making technical errors so often	2.13	2.95
	Talking about negative sport results	2.91	2.86
	Getting mad for no reason	3.11	2.63
	Showing up late for training	2.92	3.03
	Feeling reluctant to training	2.16	3.05
	Feeling tired	2.13	2.21
	Average	2.50	2.82

The percentage of student respondents believing they felt hard to concentrate scored 2.15 while that of their sport coaches was 3.02. Similarly, the number of coaches saying that students making technical errors so often in training averaged at 2.95 while that of their students was only 2.13. This result shows that average scores of coaches were higher than those of their student-athletes with 2.82 and 2.50 respectively. In other words, coaches seemed to concern more about the frequency of training, excitement at competing, and anxiety about achievement.

3.2. Causes of anxiety of student-athletes in sport competition

When studying the causes of student-athletes' anxiety in sport competition, we found a variety of causes: feeling stressful about achievement (at 2.92); feeling ashamed for poor performance (at 2.89); feeling nervous about injuries (at 3.03), and especially feeling underestimated for their efforts (at 3.11 – the highest percentage)

However, their coaches' opinions on causes of student-athletes' for their anxiety were pressure about achievement (at 3.12), anxiety about injuries (at 2.55), worries about rewarding via certificate of merit, award, and financial support for training, etc.

No.	Causes of anxiety of student-athletes in sport competition	Students	Coaches
	Feeling stressful about achievement (for image of the university, achievement of class, school, etc.)	2.93	3.12
	Feeling ashamed for poor performance (losing value, failing to prove personal ability)	2.89	2.12
	Competing for a chance of recognition (certificate of merit, financial support, etc.)	2.35	2.51
	Having no second chance	2.62	2.21
	Feeling nervous about injuries	3.03	2.55
	Feeling underestimated for personal sporting efforts	3.11	2.36
	Average	2.82	2.48

Table 2: Causes of anxiety of student-athletes in sport competition

Coach N.T.T (chosen randomly for in-depth interview) said: "in sport competition, most student-athletes tried their best for the image of their university. It is true that some students are exceptionally talented (i.e. at soccer) which results in difficulties for their teammates to maintain good cooperation/coordination with them during the competition; therefore, these gifted students would often suffer from upset and depression upon losing a match".

Coach H.K. shared the same opinion on talented students: "In a tournament normally a student-athlete will be awarded with the best athlete prize, yet, sometimes, the best athlete prize winners are not the best in fans or spectators' views which leads to disappointment in other student-athletes. Nevertheless, it happens, even in sports. Thus, we need to learn to accept it.

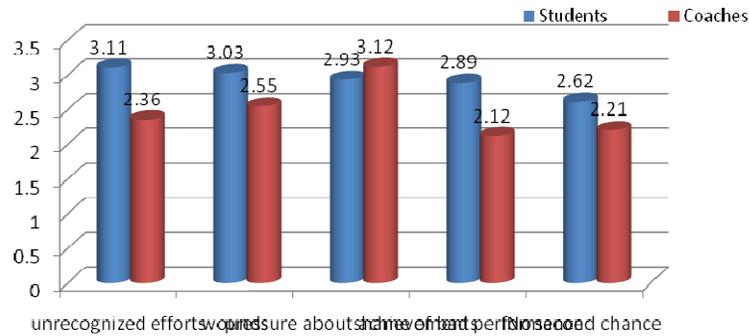


Figure 3: Causes of anxiety of student-athletes in sport competition

The results also show that the levels of anxiety of students' self-assessment on certain criteria were higher than those of their sport coaches, with 2.82 and 2.48 respectively. As a result, there was a significant gap in the perception of coaches and students about the causes of anxiety of student-athletes in sport competition. We believe that this gap plays an important role in communication between student-athlete and coach. For example, a student-athlete suffering from the fear of being injured may feel reluctant to training, meanwhile, his coach may think that fear comes from the anxiety of financial support or a certificate of merit. This gap may result in negative experience and inappropriate communication between the student-athlete and his coach.

3.3. Effects of anxiety on sporting achievements

From the above-mentioned figures about levels of anxiety (71.4% student respondents) and its causes (in order from anxiety of underestimated recognition – at 3.11; injuries – at 3.03; pressure about achievements – at 2.93, etc.), we studied more, using in-depth interview, about their effects on students' sport achievements. The findings are as follows:

A senior student-athlete, H.B.K, said: "I have a feeling that the result would not be good even though the competition has not even started yet. I feel very confused and worried although I have worked very hard. Maybe the junior students are more talented than we are."

A number of respondents were afraid of being laughed at by their teammates or friends who may doubt their sport ability. T.P.L, a student respondent, said: "*I play table tennis doubles and I am always worried about missing hitting one or two balls (it happens in recent training sessions) which may affect the team's victory. Maybe they will blame the failure on me*".

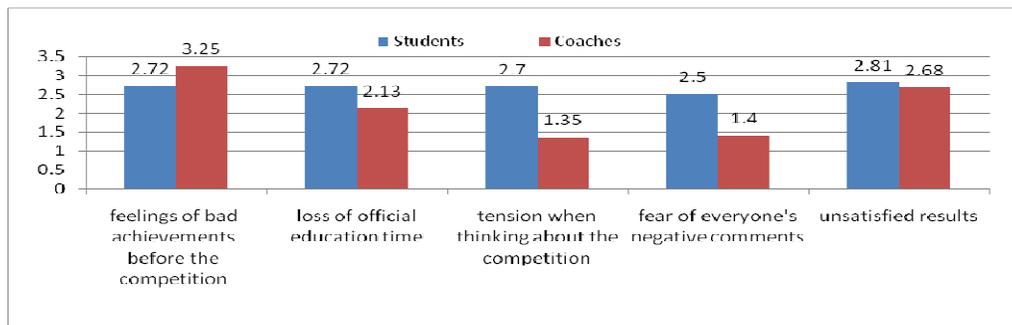


Figure 4: Perception of sporting achievement of students and coaches.

When we ran the correlation test, the correlation coefficient between levels of anxiety and sport achievement was $r = 0.732$ and $p < 0.05$. This means the result was significantly correlated. In other words, the more anxious a student was, the worse sport performance he would have.

To be more specific, the number of students predicting that they would win third prize, second prize and first prize were 45.2%, 28.9% and 15.1% respectively. Interestingly, only 2.5% predicted that they would not win any prizes at all.

Figure 3: Prediction of prizes of students

	Prediction	%
1.	First prize	15.1
2.	Second prize	28.9
3.	Third prize	45.2
4.	Consolation prize	8.3
5.	None prize	2.5

3.4. Solutions to reduce levels of anxiety and improve sport performance for student-athletes

When we studied the students' opinions on measures to reducing levels of anxiety and improving sport performance, the results are as follows:

There is a need of technical coaches on supplementary techniques for different sports, averaging at 3.85.

Development of exercises to reduce stress and anxiety for 5-10 minutes in each training session. Suggested exercises are: stress relief, laughing, watching comedies, etc. averaging at 3.83.

Paying attention to solutions to protect athletes' head/leg/arm (injury prevention) and measures of healthy diets and stress relief, averaging at 3.82.

There must be a regulation to punish student-athletes who cause injuries, at 3.78.

Also, they suggested other activities such as good time management for training; student-athletes' psychological assessment questionnaires on levels of anxiety and concentration before, during and after the competition, etc.

Figure 4: Solutions to reduce levels of anxiety of student-athletes

No.	Solutions to reduce anxiety	Average	Rank
1.	Technical coaches on supplementary techniques	3.85	1
2.	Regulation to punish student-athletes causing injuries	3.78	4
3.	Different measures to protect student-athlete's health (healthy diet, stress relief, head/leg/arm protective wear, etc.)	3.82	3
4.	Higher financial support from the university for student-athletes	3.25	7
5.	Assessment of student-athletes' levels of anxiety (psychological testing)	3.56	6
6.	Better training time arrangement	3.67	5
7.	Better ways to recognize student-athletes' achievement (published on school newspapers/website)	3.01	8
8.	Exercises of anxiety reduction (stress relief, laughing, watching comedies, etc.)	3.83	2

4. Conclusion

This paper has indicated that there was a similarity in the perception of sport coaches and their students about the levels of anxiety of student-athletes in sport tournaments organized by Danang University.

Among of the causes of anxiety were pressure for achievement, being injured, and ways to recognize student-athletes' contribution, etc. which resulted in a decrease in student-athletes' excitement in training leading to more stressful in competing. As a result, student-athletes would end up in negative feelings about their sport performance.

The findings recommend a number of solutions to improve sport performance and anxiety relief for student-athletes, including: paying little attention to achievement and prizes; better time management for training; technical experts; healthy diet and stress relief; head/leg/arm protective wear; and especially psychological counseling before competition.

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Who Should Design Sport Tourism Marketing Mix: Sport Event Managers Or Tourism Sector?

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Abstract:

The purpose of this study was to compare two conceptual models for determining the designer of the sport tourism marketing mix. In the first conceptual model, sport event managers (SPEM) will influence sport tourism marketing mix (STMM) and it should be designed by them. But in the second conceptual model, sport tourism marketing mix effects on sport event managers and it isn't designed by them. The research method is correlation-descriptive and the statistical sample included sport tourism experts, and Iranian and non-Iranian sport tourists (n=362). A researcher-made five scales Likert questionnaire was used for collecting data. The validity and reliability of the instrument were investigated carefully. Descriptive statistics and structural equation modeling (SEM) were used for analyzing data. The results showed that fit indices of the first model (the impact of SPEM on STMM) are better than the second model. So, the theory which suggests sport event managers will be better than tourism sector in designing STMM was approved. Of course, any designing process will need bilateral cooperation of both.

Key words: sport tourism, marketing mix, sport event managers, tourism sector

1. Introduction

Paying attention to marketing would lead to sport tourism development. Tourism marketing is a special issue (Honarvar, 2009) and it's considered as the most important factor in sport tourism development in Iran (Moein Fard, 2008). Besides the market, travel and destination, marketing is one of the four elements of tourism system (Mill and Morrison, 1992). Kotler (1994) has delineated the marketing process in five steps: the first step is research (R), the second is segmentation, targeting and positioning (STP), the third step is marketing mix (MM), the forth is implementation (I) and the last one is control (C). As the most important step in the marketing process, marketing mix is a mixture of marketing tools and techniques that changes marketing concepts by implementing marketing mix. Kotler defines the marketing mix as some marketing tools used in order to reach marketing goals in the target market (Kotler, 1994). According to McCarthy's view, marketing mix consisted of 4 strategic components (4P). These components are product, price, place and promotion (Kouzechian et al, 2010). Product encompasses goods and services offered to markets. Distribution is the way in which services and products can be available to the market. Price is related to the cost of a product in a market. Promotion is related to the communication activities. Advertisement, public relation, sale promotion and personal selling are usually considered as marketing relationships (Pender, 1999).

In general, the origin of marketing mix has emanated from manufacturing organizations and in some cases it's been recommended to be adjacent with service sectors. Booms and Bitner (1981) suggested extended marketing mix for service sectors in addition to four aforementioned elements. It also consists of people, physical evidences and process (7P).

In development of tourism goods and service process and reaching the optimal condition with products and services marketing in the tourism industry, Zemak and Schaaf theory that is known as service and product triangle, is useful. In this theory, consumers, personnel and management are three sides of the triangle that lead to an increase in the quality of products and services and finally consumer satisfaction. Law (1992) believes that due to the special condition of tourism industry,

tourism goods and services development process should be influenced by these three aforementioned variables.

Sport tourism hasn't been developed very well in Iran and there is no approved strategy for sport tourism marketing. Despite the huge amount of money spent by sport ministry, national Olympic committee, federations and other sport related organizations in sport events, sport tourism can't use these benefits of sporting events for development and these opportunities are always missed. To take advantage of this opportunity, developing sport tourism marketing mix would be helpful. In addition, due to the fact that designing marketing mix is a part of both tourism goods and services development process and based on Zemak and Schaaf theory, it seems that sport event managers should design sport tourism marketing mix themselves. On the other hand, according to Kotler's marketing process, marketing mix is influencing implementation. Moreover, both sport and tourism organizations are active in sport tourism and each of them has its own management and planning for sport event tourism respectively. Traditionally, the tourism sector is more active in the marketing process. So, based on the aforementioned, the question is that for having a more effective marketing process, which sector should be more involved in designing sport tourism marketing mix. Should sport tourism marketing mix imply to sport event managers how to work? Or sport event managers should determine how a sporting event and its resultant sport tourism be designed. This study investigated this problem according to the below conceptual model (fig 1).

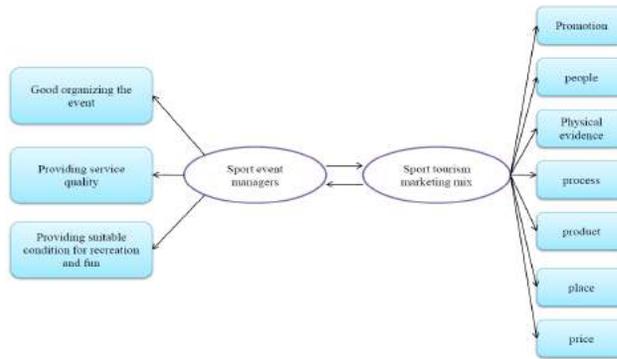


Fig1. The research conceptual model

2. Methods

The research method of this study is correlational-descriptive and the statistical sample consisted of sport tourism experts, foreigner sport tourists and Iranian sport tourists (n=362). 460 questionnaires were distributed among samples but totally 362 completed questionnaires were given back. A researcher-made five scale Likert questionnaire with 24 questions was used for collecting data. The questionnaire was made according to the research literature and comments of sport management professors. The content validity was approved by 17 sport management professors and construct validity was approved by exploratory factor analysis (EFA). Also, the reliability of the instrument was investigated by Cronbach's Alpha method ($\alpha =0.775$). Descriptive statistics and structural equation modeling (SEM) were used for analyzing data drawing on SPSS and LISREL softwares.

3. Results

The results showed statistical sample consisted of 177 Iranian sport tourists, 125 foreigner sport tourists and 60 sport tourism experts, 85 % of the respondents were men and 15 % were women and the mean age of the respondents was 27 years.

Confirmatory factor analysis (CFA) was conducted to reinvestigate the relationship between questions and their variables. The results of CFA confirmed all questions except the question related to providing suitable condition for recreation and fun in Sport Management variable. Because the question's factor loading was less than 0.3, it was omitted from the analysis. Then, structural equation modeling (SEM) was executed and two conceptual models were tested. For testing the conceptual model two SEMs were conducted. At first, the effect of sport event managers on sport tourism marketing mix was measured and then this relationship was tested vice versa.

Although the fit indices of two models are relatively good (Table 2), the fit indices of the first model were better. So, it's recommendable to use the first model for sport tourism marketing in Iran (Fig 2).

Table 2. Fit indices of two models

	χ^2	Df	P	RMSEA	GFI	TLI	CFI
Model 1	54.42	22	0.001>	0.064	0.97	0.96	0.98
Model 2	68.32	23	0.001>	0.074	0.96	0.94	0.96

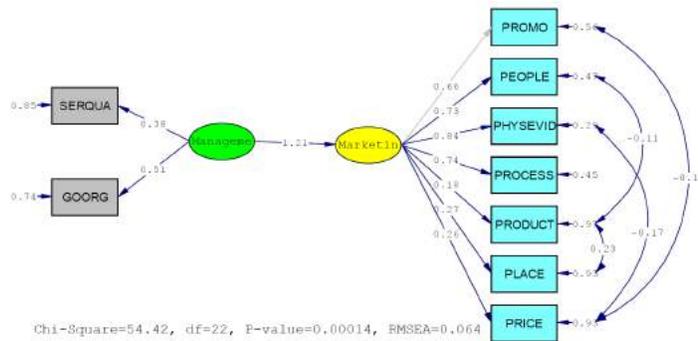


Fig2. The standardized coefficients (first model)

Discussion

As the results showed, though the fit indices of two tested models were relatively good, the first model's fit indices were better. Also, the coefficient of SPEM on STMM was more than the effect of STMM on SPEM. Thus, although marketing mix is in the last parts of the marketing process and it's considered as a final strategy for delivering products to the customers (Kotler, 1994, Kotler and Nancy, 2008 & pender, 1999), it should be implemented at last. Since it's the duty of sport managers to organize the sporting event, sport tourism marketing mix is implemented by sport event managers. Based on the results, the sport event managers should design and implement sport tourism marketing mix. In this regard, it is necessary for sport event managers to have a reciprocal relationship with

tourism agencies. Also, in research literature the necessity of coordination between sport event managers and tourism agencies for tourism development has been emphasized (Bramwell, 1997, Chalip and Green, 2001, Chalip et al, 1998, Gibson et al, 2003 & Neirotti et al, 2001).

As the most important part of a marketing plan, marketing mix should be considered carefully. Marketing mix specifies what products, in what place, at what price, how to promote, with which physical evidence and human resources and ultimately in what process (7Ps). Among sport tourism marketing mix, physical evidence and people as well as promotion had greater factor loadings. According to this result, it's necessary to pay attention to designing of sport facilities, adorned personnel, using the top facility and equipments, creating a pleasant and friendly atmosphere and using appropriate advertising methods.

In general, the results suggest that sport event managers should design and implement sport tourism marketing mix themselves. To design and implement appropriate plans, it would be helpful to investigate each element of the marketing mix before the sporting events. Also, making such a close relationship with sport tourism related organizations would be useful.

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Determining Factors Affecting Sport Venue Quality In Iran

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Abstract:

Attendance of spectators at sporting events makes high economic income and the quality of sport venue is one of the most important factors influencing spectator's attendance at sporting events. So, the purpose of this study was to investigate different factors affecting sport venue service quality in Iran. The research method was descriptive – correlation and the statistical sample consisted of 265 spectators attended to Tehran's Azadi stadium for watching a football game between Esteghlal and Persepolis. The research instrument was Shonk's Ph.D. dissertation questionnaire. The face and content validity was approved by opinion of sport management instructors and the reliability was verified by the coefficient of Cronbach's alpha, ($\alpha=0/89$). The SPSS16 was used for description of variables and LISREL software was used for doing Confirmatory Factor Analysis. The result showed "environment of stadium" (factor loading= 0/85), "interaction of staff" (factor loading= 0/73), "price of service and products" (factor loading= 0/71) and "access quality of sport venue" (factor loading= 0/57) had significant effect on sport venue quality. According to the results it can be concluded that from the view point of spectators the environment of stadium have the most effect on the service quality in Azadi stadium that should be noted more than the other variables.

Key words: quality, Sport venue, Factors

Introduction

Spectators Attendance is the most important part of a sporting event. In all over the world a lot of people spend their money, time and energy for watching sport events and also because of their enthusiasm they travel long distances to get the match places (Saatchian et al, 2013). Football is a popular sport in Iran and in comparison to the other sports has much more players and spectators (Elahi et al, 2012). In this context, maintaining amount of demand is one of the sport marketing challenges (Theodorakis et al, 2013). So, paying attention to service quality and development of its dimensions is one of the important strategies to satisfy spectators and make their retention (Yoshida & James, 2010).

Sport spectators service quality contains outcome quality and functional quality. Outcome quality includes player's performance, contest quality and the team values and characteristics. Functional quality consists of the environment of stadium, parking and the interaction between spectators and personnel (Yoshida & James, 2010). In this regard sport venue quality influences on behavior, attendance, wasting money and the intention to return of spectators. Factors affecting sport venue service quality includes parking, cleanness, fan control, food quality and other delivered services in stadiums (Hill & Green, 2012) and according to the Shonk's model (2006) three dimensions of sport venue service quality consist of environment, interaction and price.

Although sport events are an important resource of revenue and lots of money spent in football in Iran, the number of spectators has been reduced. Review of literature shows sport venue quality is an important factor to attract spectators to the sport events. So, based on the above content and because of the importance of the issue and according to the conceptual model (fig 1), the purpose of this paper is to measure the influence of different dimension of sport venue service quality.

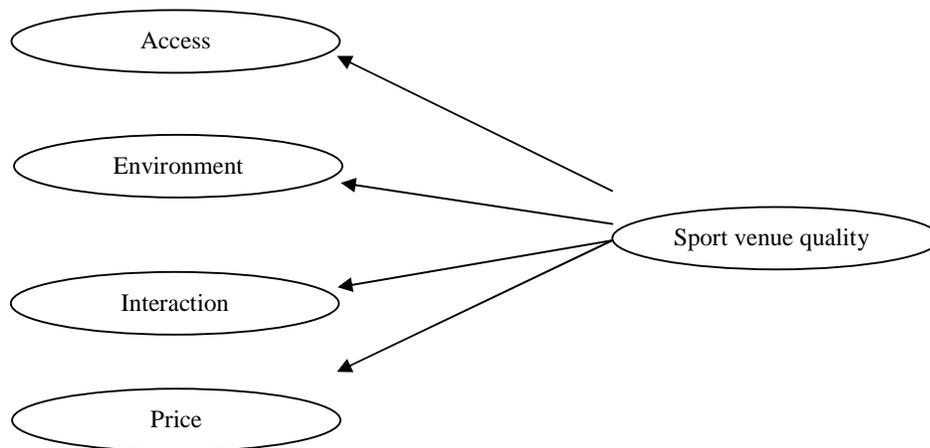


Fig1. Conceptual Model of factors affecting sport venue quality

Research Methodology

The research method was descriptive – correlation. Statistical sample consisted of 265 spectators attended to Tehran’s Azadi stadium for watching a football game between Esteghlal and Persepolis. The research instrument was Shonk’s questionnaire. The content and construct validity were approved by investigating opinions of sport management faculty members and Exploratory Factor Analysis of pilot research data. The reliability was approved by Cronbach’s alpha method ($\alpha=0/892$). The SPSS 19 software was used for descriptive statistics and exploratory factor analysis. Also, Confirmatory Factor Analysis was done by LISREL 8.7 software.

Results

Descriptive statistics showed the average of respondents age was 23 years old. 72/8 percent of them were single and 27/2 percents were married. Other descriptive statistics is mentioned in table1.

Table1: Descriptive Statistics

Variables	Percentages				
Job status	Clerk: 9/06 %	Labor: 23/77%	Student: 38/86 %	Business: 34/72%	Unemployed: 10/57 %
Income (per month)	<100 \$: 24/53 %	100-200 \$: 27/17 %	200-300 \$: 19/25 %	300-400\$: 13/96 %	400 \$<: 15/09 %
Education	<Diploma: 21/89 %	Diploma: 49/81 %	Technician: 15/47 %	Bachelor: 11/70 %	Master and more: 1/13 %

To investigate the relationship between questions with their components first order Confirmatory Factor Analysis (CFA) was used (Fig 2).

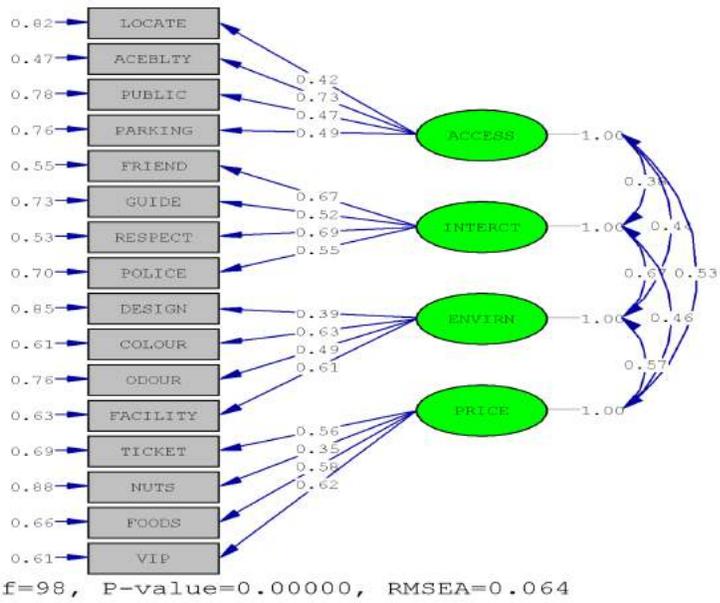


Fig2. First order Confirmatory Factor Analysis (CFA)

As it has been shown the “Convenient of accessibility” (Factor loading=0.73) has more influence on the access quality, the “respective behavior” (Factor loading=69) has more influence on the interaction quality, the “color of environment” (Factor loading=63) has more influence on the environment quality and the “the price of VIP ticket” (Factor loading=62) has more influence on the price.

Also, to investigate the influence of access, environment, interaction and price on the sport venue quality second order Confirmatory Factor Analysis was done (Fig3).

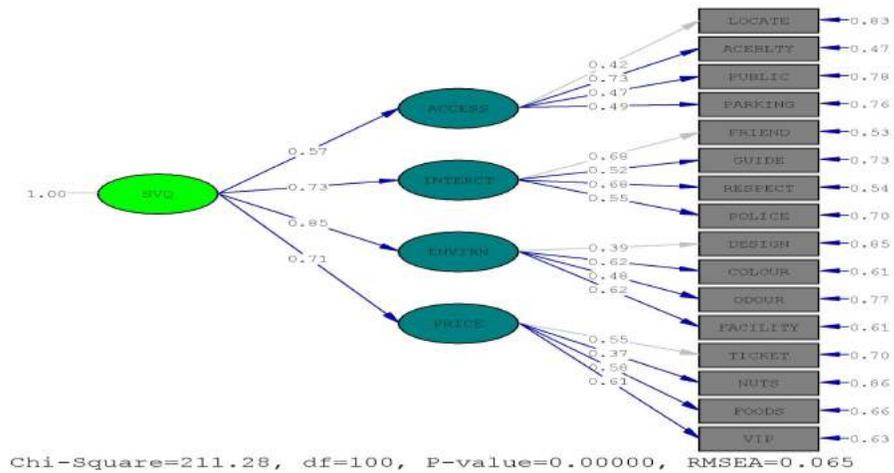


Fig3. Second order Confirmatory Factor Analysis

As it can be seen, “environment of sport venue” (Factor loading= 0.85) has more influence on the sport venue service quality. Moreover, all of the fit indices are acceptable (Table2) and all of T Values are significant.

Table2. Fit indices

Fit indices	χ^2	Df	RMSEA	GFI	CFI
Amount	211.28	100	0.65	0.91	0.91

Discussion

The results of Confirmatory Factor Analysis showed that the variable “environment” has the most amount of factor loading (0.85). It means the quality of bathrooms, seats, sound system, guidance signs, design and architecture of stadium and other factors relating to the tangible dimension of service quality have considerable effect on the sport venue quality. In this regard Greenwell et al (2002) mentioned consumers’ positive perception of physical environment of a sporting event has positive relationship to the attendance. Also, among factors affecting environment, “color” and “facilities” have more factor loading (0.62). So, having comfortable seats, high quality scoreboard, beautiful court, cleanness of stadium and the quality of sound system have significant effect on the spectators’ perception of service quality.

The second variable affecting sport venue service quality is “interaction” (Factor loading=0.73). It means the interaction and personnel behaviour of staff in sport venue is so important. Different researchers mentioned that human interactions is one of the most important components of sport experience (Khatibzadeh, 2011). Also, among factors affecting interaction, “respective behavior” and “friendly interaction” has more factor loading (0.68). Yamaguchi (2002) reported impolite response of staff has negative effect on retention of spectators.

The “price” variable (Factor loading= 0.71) also has significant effect on sport venue service quality. It can be concluded the price of service and products is so important to the spectators. Different studies reported consumer satisfaction is influenced by the price of services (Khatibzadeh et al, 2012). Among factors affecting the price, “price of VIP ticket” (Factor loading=0.61) has more importance. It can be induced watching the game from VIP is so important for spectators.

Another variable affecting sport venue quality is “access” (Factor loading=0.57). In this context Hall et al (2010) said if spectators have satisfactory facilities such as accessibility and Parking will attend the event again. Also, convenient access to the sport venue can lead to reducing time and cost and makes favorable experience for spectators (Hinch & Higham, 2004). So, in designing and constructing sport venues some factors such as highways and roads, entrance and exit of spectators, parking and public transportation should be noticed.

Generally, it can be concluded different variables influence sport venue service quality that should be considered.

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Body Height changes Tendencies In Footballers

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Abstract

The value of anthropometric indicators for talent selection within the majority of sports can hardly be overestimated. Elite athletes in the majority of sports are typically described by a set of established model indicators in various fitness and skill determinants, with anthropometric criteria being quite important for the performance outcomes. Since the phenotype of elite athletes is predominantly the expression of inherited genetic factors, it is fair to state that the very fact of the existence of the aforementioned model indicators should be resultant from the very systematic talent identification and selection at all stages of long-term sport development and advancement [1, 2, 3, 4, 5, 6].

Key words: Anthropometry, Football, Body height

Introduction

Football is regarded as one of those sports with quite a variable anthropometry, with successful players of a relatively small stature of below 160cm, along with the true giants, whose height reaches above 200cm. However, footballers with both anthropometric profiles could reach high professional level and deliver elite footballing performance. Examples are plenty in the recent World Cups (WC) and European Championships (EURO): the tallest, Jan Koller, striker of Czech National Team (EURO 2008) being 202 cm tall, as is Serbian striker Nicola Zigic (WC-2010). Down the list are Swedish goalkeeper Andreas Isaksson, with 199cm (EURO 2012) and Fraser Forster, goalkeeper of England, whose height is 201cm (WC2014). The following footballers, on the contrary, fall within the relatively low-height category: Romanian National Team midfielder Petra Florentin- 166 cm (EURO 2008), while the National Team of England midfielder Aaron Lennon's height is only 165 cm (WC2010) with Sebastian Giovinco, playing as a midfielder for National Team of Italy at EURO 2012, is 164 cm tall. Strikers Edgar Salli, playing for the National team of Cameroon, and Lorenzo Insigne from the National Team of Italy are both 163 cm short.

Notably, however, the average height of the National Teams' footballers is gradually increasing. The average height of the footballers of the 2014 World Cup winners - National Team of Germany equals 184.61cm, with only the National Team of Belgium, (currently atop of FIFA Ranking), having the higher values of 185cm. Data shows, that the average height of German international footballers at EURO-2012, amounted to 185cm, with similar figure of the Croatian national footballers. At the World Cup 2014 the National Team of Chili had the lowest height average of 176,2cm, while the average height of all International footballers at the World Cup in question was 183,2cm [7, 8, 9, 10, 11].

Methodology

The trends, particularly the dynamic progression of the average height of the footballers of Ukrainian clubs in the course of all of the 25 Championships of Ukraine (CoU) dating back to the year 1991 and up to the first round of the current 2015/2016 Championship of Ukraine, are researched in this current study. Following the voting procedure within the 'Top Championship' category, run by the International Federation of Football History and Statistics (IFFHS) the Championship of Ukraine (as of January, 2016) is ranked 13th worldwide [12], presented data may serve as valuable contribution to the assessment of the current tendencies and the future prospective as well as retrospective modeling. It's worth mentioning as delimitation factor, that sizeable number of foreign players recruited in Ukrainian clubs contributes to those trends (in the latest seasons of 2011/2012 their number

amounted to 184, with 186 in place within 2012/2013, 170 – within 2013/2014, 101 – within 2014/2015 and 60 within first round of 2015/2016 season).

The footballers were grouped into two categories:

Goalkeepers

Field players

The field players were in turn categorized into three sub-categories as per their playing position:

Defenders

Midfielders

Strikers

Eligible players were the ones with at least one game played at the aforementioned Championships of Ukraine. A few players had no anthropometric measurements within the very first CoU which hadn't compromise the power of the study. All the information about the footballers' body height was obtained from the official sources and previous own publications [13, 14, 15, 16, 17, 18].

Data analysis involved the average height of goalkeepers and field players (defenders, midfielders, strikers) from 25 Championships of Ukraine in general, as well as plotting longitudinal data in particular. All the data has been presented in terms of variation of average footballers' height, taking a due account of statistical modeling and repeated procedural calculation.

Results

Presented below are sixth degree polynomial models which give the most accurate depiction of dynamical modifications of an average footballers' body length with a high probability ratio of approximation (charts 1 to 5).

In the course of the last 25 years, the average body length of goalkeepers appearing at the CoU has increased in 5 cm (chart 1), while the field players appear to 'grow' 3 cm taller (chart 2). This corroborates with the previously reported study that during half of the century, both goalkeepers and field players of the former USSR (now the territories of Ukraine, Russia, Belarus and another 12 countries) have become on the average 10 cm taller [19].

Goalkeepers. Analysis and estimations involving the two recent seasons at the CoU reveals that in 2014/2015 season the height of only 2 goalkeepers (5% of goalkeepers of 40 analyzed), were under 185 cm, whereas 22 (55 %) were above 190 cm. In 2015/2016 season only 1 goalkeeper (3%) of the total number of 34 analyzed was under 185 cm, while 23(68 %) were 190 cm and taller. Notably, a few decades ago the USSR prominent goalkeepers, such as Anzor Kavazashvili (175 cm), Aleskandr Prokhorov (176 cm), Otari Gabelia (177 cm) and Viktor Bannikov (179 cm) [20] were successfully defending their National team's goal. On the contrary, German keeper Manuel Neuer, who is 193 cm tall, has been ranked World Top Goalkeeper for three consecutive seasons following the voting procedure run by the International Federation of Football History and Statistics (IFFHS). The height of a number of top world goalkeeper's reaches 200 cm and above. The polynomial model vividly displays that the average body height of goalkeepers is likely to increase in the coming years.

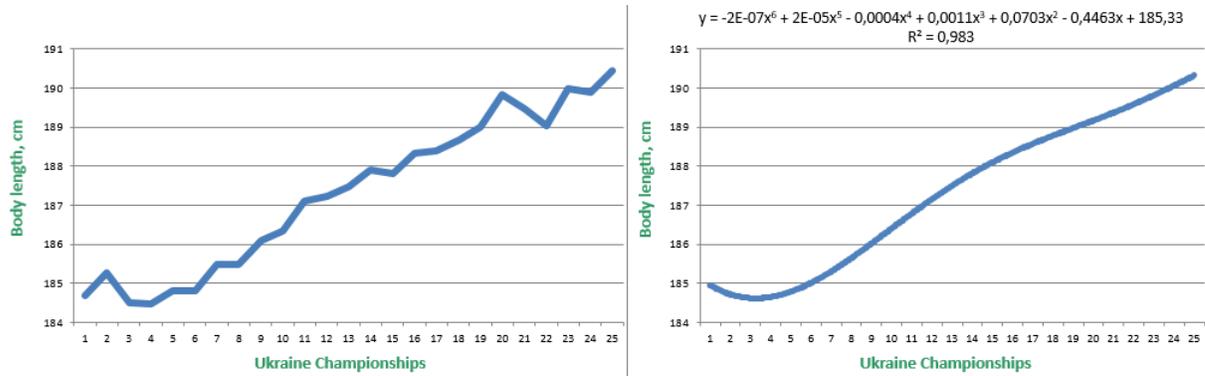


Chart 1. Longitudinal dynamics and polynomial model of an average goalkeepers' body length (means at the left, regression equation – on the right)

Field players. The average body height of FC 'Volyn' Lutsk' field players measured to 188 cm in 2012/2013 season, while in both previous seasons it counted 187,2 cm. According to CIES Football Observatory FC 'Volyn' Lutsk' was regarded as the tallest European Team among 500 teams representing 33 European Professional Leagues. However, the height did not happen to be of primary significance. FC Barcelona was regarded as 'shortest' European club team, with an average height of players at 1,775 cm. Triumphant for the short height criteria, was winter 2011 when the modern football world was stunned by the 'triumph of the shorty's', when none of the 2011 FIFA Ballon d'Or final nominees – Leo Messi, Andres Iniesta and Xavi Hernandez – had a height of above 170 cm. In the recent years the body height of the field players, involved in the Championship of Ukraine, has stabilized (Chart 2). Also the analysis of data of two last seasons in the CoU shows, that in 2014/2015 the height of 158 field players (41 %) from the total number of 388, were below 180 cm; 113 of them (29 %) – were 185 cm and taller and the height of 37 (10 %) was at 190 cm and above. In 2015/2016 – only 115 (37 %) out of 309 field players were below 180 cm tall, but the height of 91 (29 %) reached 185 cm and above, while only rest 37 (12 %) were 190 cm and taller. As one can clearly see, both the absolute figures (for instance, up to 37 footballers are 190 cm and taller) and relative ones remain relatively constant.

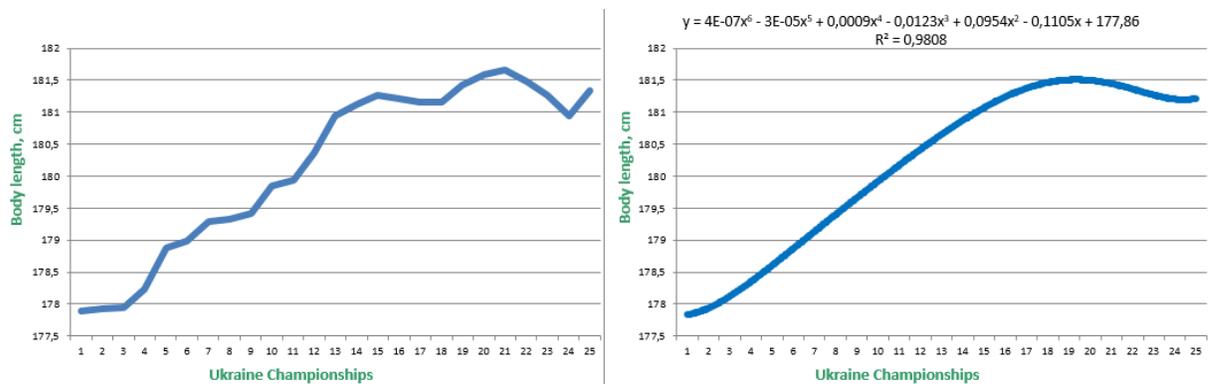


Chart 2. Longitudinal dynamics and polynomial model of an average field players' body length (means at the left, regression equation – on the right)

Defenders, midfielders and strikers. Tall central defenders and very maneuverable and fast wingers proved no extraordinary anthropometric indicators; however for the time being they create certain balance and contribute to the noticeable tendency of stabilization. In 2015/2016 Championship of Ukraine, 23.7% of the players within this group had height below 180 cm, and 24.6% were 190 cm and taller. In positional roles of the midfield there is always a high demand for fast skillful footballers; however generally their body height is short. In 2015/2016 CoU there were 49.61 % of footballers with height below 180 cm, and 1.57 % of footballers were 190 cm and above. Thus, almost continuous development is apparently followed by a minor decrease trend. Although the high

demand exists in recruiting fast skillful footballers, strongly built, tall and physically strong footballers are in high demand too. In 2015/2016 CoU 36 % of footballers have height below 180 cm, 36% are 185 cm and above, whereas only 11% are 190 cm tall and taller.

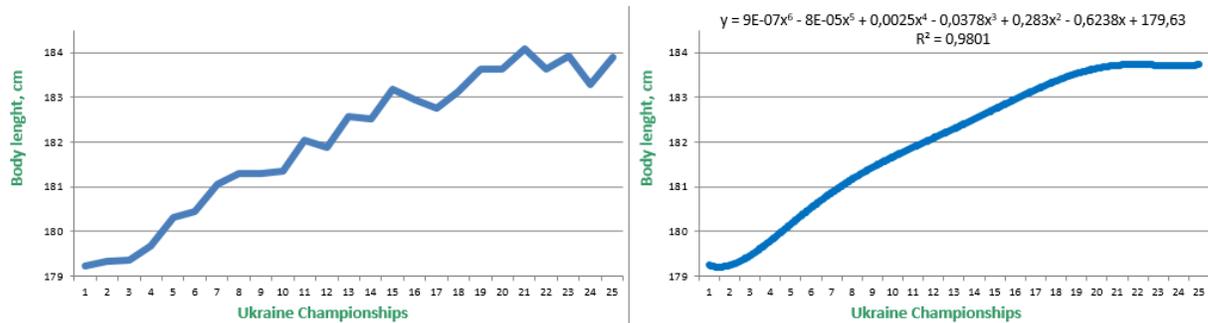


Chart 3. Longitudinal dynamics and polynomial model of an average defenders' body length (means at the left, regression equation – on the right)

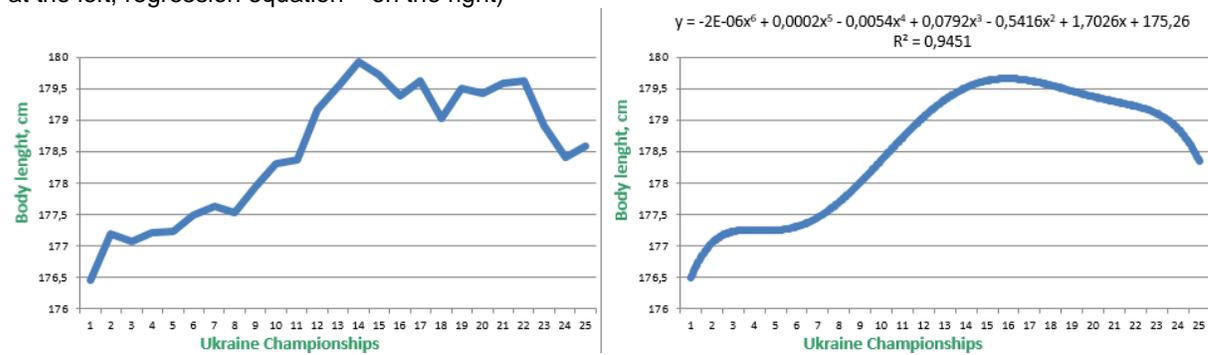


Chart 4. Longitudinal dynamics and polynomial model of an average midfielders' body length (means at the left, regression equation – on the right)

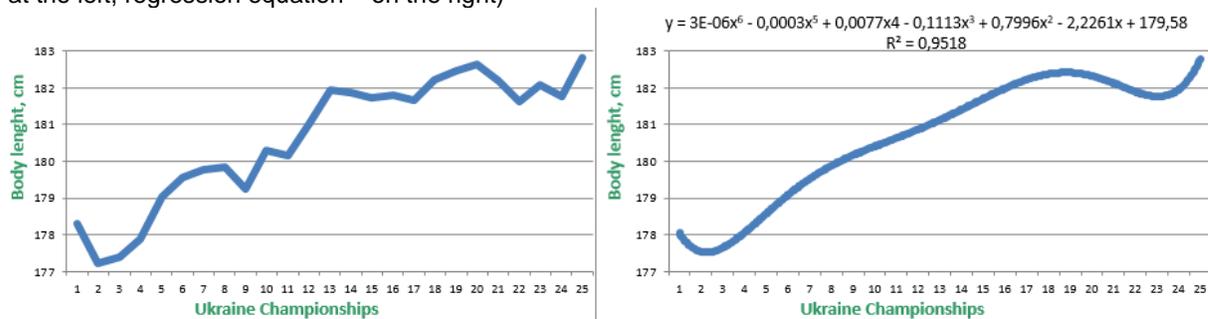


Chart. 5. Longitudinal dynamics and polynomial model of an average strikers' body length (means at the left, regression equation – on the right)

Conclusions

The analysis of the longitudinal dynamical variations of the average height of footballers' by means of polynomial modeling allows outlining the following:

Obtained linear regression graphs (which care for the adjustments of randomly occurring value deviations) support mathematically sound estimates of footballers belonging to different field positions height ;

There is a clear trend to continuous progression of the average height of goalkeepers, that is about to prevail in the near future, however the trend is not linear, rather evident of variance in terms of height of the footballers from season to season.

Stabilization of the average height of field players is likely to occur in the near future;

Same is likely to happen in case of the defenders;

The average height of midfielders is a bit on the decline;

The trend of gradual increase of the average height of midfielders in the nearest future is quite obvious (may last for about three years [21]), The average height of footballers may go through the slight increase in the nearest future (due to taller goalkeepers, strikers and central defenders).

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A Comparison Study On The Effectiveness Of Aerobics And Combination Of Plyometric And Aerobic Exercise On Selected Physical Parameters Amongst Male Students Of Arba Minch Secondary School, Ethiopia

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Abstract

The purpose of this research was to compare the effectiveness of aerobics exercise and combined plyometrics with aerobics exercise in selected health related physical fitness variables on male students of Arbaminch secondary school. The result indicated that Aerobics exercise had significant effect on all of the physical fitness variables cardiovascular endurance, muscular strength and muscular endurance. The combined training had significant effect on muscular strength, muscular endurance. Thus, it is recommended that physical education teachers, fitness trainers and coaches should use aerobics training method in the development of health related physical fitness and for muscular strength and muscular endurance purposes used plyometric training methods for performance enhancement.

Key words:- aerobic exercise, plyometric exercise, selected health related physical fitness

Background of the study

Aerobic exercise and aerobics with plyometric exercise stimulates heart, lungs, maximal oxygen consumption and all working group of muscles and produces valuable changes in body and mind. This idea supported by Mahendran (2009) by saying that many physiological changes are determined by daily aerobic exercises. Now a days in our country Ethiopia , because of sedentary life style most people are attacked by chronic disease such as; coronary heart disease, hypertension, diabetes, and Some other upcoming diseases (Mathewos *et al* 2013). Therefore, the habit of regular exercise to enhance physical fitness and the establishment of healthy lifestyles are the key issues at present.

In Ethiopia, from recent past many people have been visiting different gymnasiums and fitness centers to level their fitness, to maintain health, to keep their body shape to some acceptable standard, as well as for other various related purposes. However, fitness training provided by business trainers, coaches and sport teachers often follows the same training routines for all types of exercise (aerobic and aerobics with plyometric). Due to this those who were participated in the exercise spent more time in the activity but not achieved the best result in the improvement of their fitness level. Consequently, many people far apart from fitness training and complaining on achievement of valuable changes on their fitness through training processes. This also hampered the contribution of sport science to the society. Therefore, this study tried to compare the effectiveness of aerobics and combination of aerobic and plyometric exercise on selected physical fitness parameters and to suggest what to use when. The objectives of this study are:

To compare the effectiveness of aerobic and combined plyometric exercise with aerobic exercise on selected health related physical fitness variables.

To identify the type of exercise which is more preferable for physical and physiological aspects from aerobic and aerobics with plyometrics exercise.

Materials And Methods

Quasi-experimental research design was used. The target group of the study was all male students of grade 9 Arba Minch Secondary and preparatory school. A total of forty-eight (n=48) students were selected purposively based on the following criteria: - no previous health problem (hypertension, bone or muscle problem, voluntary and highly motivated). The students were grouped into three categories

as aerobic exercise, aerobic with plyometric exercise (combined) and control group. During the experimental period the students were told not to engage in any other main sport activities.

Ten week training protocol

The ACSM (1995) current recommendation for aerobics activity to be performed is 3-5 days/week for 20-60 minute continuously. But the exercise effect varied according to the age, genetics, environment and fitness level of the individual. Therefore, both the experimental groups perform an activity from low intensity to progressively increase until moderate intensity.

Table 1: Ten weeks aerobics and plyometric with aerobic training protocol

Exercise type	Week	Warm up	Aerobic group (time) min	Cool down	Frequency per week	Intensity (%)
Aerobics	1	10 min	25min	10	3	40-50 Max HR low
	2	10 min	30 min	10	3	40-50 Max HR low
	3 - 5	10 min	35 min	10	3	50-60 max HR moderate
	6 - 7	10 min	40 min	10	3	50-60 max HR moderate
	8 - 9	10 min	50 min	10	3	60-75 max HR Moderate
	10	10 min	55 min	10	3	60-75 max HR Moderate
Plyometric with aerobic (combined)	Week	Warm up	Plyometric & Aerobic group (time) min	Cool down	Frequency per week	Intensity (%)
	1	10 min	25 min	10	3	40-50 Max HR low Plyo-low impact
	2	10 min	30 min	10	3	40-50 Max HR low & low impact
	3 - 5	10 min	35 min	10	3	50-60 max HR moderate & plo low & moderate
	6 - 7	10 min	40 min	10	3	50-60 max HR moderate, plyo low & moderate
	8 - 9	10 min	50 min	10	3	60-75 max HR Moderate, plyo-low & moderat
	10	10 min	55 min	10	3	60-75 max HR Moderate, plyo-moderate & high

Result and discussion Result on Cardiovascular Endurance (12 minute run)

TABLE 2: MEANS OF CARDIOVASCULAR ENDURANCE (Score in meter)

Test	Group	N	Mean	Std. Deviation
Pre-test	aerobic	16	2649.56	275.133
	combined	16	2477.75	106.661
	control	16	2480.56	253.788
	Total	48	2535.96	234.387
Post-test	aerobic	16	2661.31	277.630
	combined	16	2483.44	106.598
	control	16	2476.63	253.772
	Total	48	2540.46	237.161

The pre-test means score of aerobic, combined and control groups on cardiovascular endurance were 2649.56, 2477.75 and 2480.56 respectively. The post-test means showed differences due to ten weeks of aerobic and combined training on cardiovascular endurance were 2661.31, 2483.44 and 2476.63 respectively.

TABLE 3. ANOVA FOR CARDIOVASCULAR ENDURANCE FOR BOTH GROUPS (Scores in meter)

		Sum of Squares	df	Mean Square	F	Sig.
Pre-test	Between Groups	309805.042	2	154902.521	3.068	0.056
	Within Groups	2272252.875	45	50494.508		
	Total	2582057.917	47			
Post-test	Between Groups	350908.792	2	175454.396	3.444	0.041
	Within Groups	2292619.125	45	50947.092		
	Total	2643527.917	47			

* The mean difference is significant at the 0.05 level.

The F-ratio of the three groups for pre-test was 3.068. This indicates that there was no significant difference in pretest between the groups. The F-ratio was 3.444, indicates that there was significant difference in post-test means of the groups. To determine which of the paired means had a significant difference, LSD post-hoc test was applied

TABLE 4. POST HOC MULTIPLE COMPARISON OF PAIRED MEAN DIFFERENCES (Score in meter)

(I) group	(J)group	Mean difference (I-J)	Std error	Sig
Aerobic	combined	177.875 [*]	79.802	0.031
	control	184.688 [*]	79.802	0.025
combined	aerobic	-177.875 [*]	79.802	0.031
	control	6.813	79.802	0.932
Control	aerobic	-184.688 [*]	79.802	0.025
	combined	-6.813	79.802	0.932

* The mean difference is significant at the 0.05 level.

The mean difference between aerobic group and combined group is 177.875, aerobic group and control group is 184.688 and between combined group and control group is -6.813. This indicates that significant difference was observed between aerobic and combined, between aerobic and control group, but there was no significant difference between combined and control group. Therefore, the 10 weeks training program significantly improved cardiovascular endurance of aerobic exercise group only.

Results on Muscular Strength (Leg strength)

TABLE 5. PRE-TEST AND POST-TEST MEANS OF MUSCULAR STRENGTH BETWEEN GROUPS (Score in second)

Test	Group	N	Mean	Std. Deviation
pretest	aerobic	16	10.500	1.1106
	combined	16	10.719	1.7221
	Control	16	10.500	1.6330
	Total	48	10.573	1.4839

posttest	aerobic	16	7.344	1.4343
	combined	16	5.813	1.3276
	Control	16	10.469	1.3720
	Total	48	7.875	2.3779

The pre-test means of aerobic, combined and control groups on muscular strength were 10.500, 10.719 and 10.500 respectively. The post-test means showed differences due to ten weeks of aerobic and combined training on muscular strength of the groups were 7.344, 5.813 and 10.469 respectively.

TABLE 6 ANOVA FOR PRE-TEST AND POST- TEST MEANS ON MUSCULAR STRENGTH (Scores in second)

		Sum of Squares	df	Mean Square	F	Sig.
Pre-test	Between Groups	0.510	2	0.255	0.112	0.895
	Within Groups	102.984	45	2.289		
	Total	103.495	47			
Post-test	Between Groups	180.219	2	90.109	47.409	0.000
	Within Groups	85.531	45	1.901		
	Total	265.750	47			

* The mean difference is significant at the 0.05 level Table 6 indicates that the obtained F-ratio of the three groups for pre-test was 0.112. This proved that there was no significant difference in pretest means of muscular strength between the groups. The post-test obtained means F-ratio was 47.409. This indicates that there was significant difference in post test means of the groups. To determine which of the paired means had a significant difference, LSD post-hoc test was applied

TABLE 7. POST HOC MULTIPLE COMPARISON OF MEANS (Score in second)

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
Aerobic	combined	1.5313*	0.4874	0.003
	control	-3.1250*	0.4874	0.000
* The Combined	aerobic	-1.5313*	0.4874	0.003
	control	-4.6563*	0.4874	0.000
Control	aerobic	3.1250*	0.4874	0.000
	combined	4.6563*	0.4874	0.000

mean

difference is significant at the 0.05 level

The mean difference between aerobic and combined group is 1.5313, aerobic group and control group is 3.1250 and between combined group and control group is 4.6563. This proved that there is significant difference between aerobic and combined, aerobic and control group, and combined and control group. Thus, the 10 weeks training has significantly improved muscular strength of aerobic exercise group as well as the combined group. It was also found that the combined group improved muscular strength better than the aerobic group.

Results on Muscular Endurance (Push up)

TABLE 8. MEANS OF MUSCULAR ENDURANCE AMONG GROUPS (Score in number)

Test	Group	N	Mean	Std. Deviation
Pre-test	Aerobic	16	14.00	4.993
	Combined	16	13.00	4.442
	Control	16	12.13	2.391
	Total	48	13.04	4.084
Post-test	Aerobic	16	15.94	4.640
	Combined	16	19.44	4.647
	Control	16	12.50	3.777
	Total	48	15.96	5.149

The pre-test means of aerobic, combined and control groups on muscular endurance were 14.00, 13.00, and 12.13 respectively. The post-test means showed differences due to ten weeks of aerobic and combined training on muscular endurance of the groups mean values recorded were 15.94, 19.44 and 12.50 respectively.

TABLE 9 ANOVA TEST ON MUSCULAR ENDURANCE GROUPS (Scores in number)

		Sum of Squares	df	Mean Square	F	Sig.
Pre-test	Between Groups	28.167	2	14.083	0.839	0.439
	Within Groups	755.750	45	16.794		
	Total	783.917	47			
Post-test	Between Groups	385.042	2	192.521	10.064	0.000
	Within Groups	860.875	45	19.131		
	Total	1245.917	47			

* The mean difference is significant at the 0.05 level.

The F-ratio of the three groups for pre-test was .839. This shows that there was no significant difference between groups on muscular endurance at initial stage. On the other hands post-test F-ratio was 10.064, indicates that there was significant difference between groups. To determine which of the paired means had a significant difference, post-hoc test was applied.

TABLE 10. POST HOC TEST ON DIFFERENCE ON MUSCULAR ENDURANCE (Score in meter)

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
aerobic	combined	-3.500*	1.546	0.028
	control	3.438*	1.546	0.031
combined	aerobic	3.500*	1.546	0.028
	control	6.938*	1.546	0.000
control	aerobic	-3.438*	1.546	0.031
	combined	-6.938*	1.546	0.000

* The mean

difference is significant at the 0.05 level.

The mean differences between aerobic group and combined group is 3.500, aerobic group and control group 3.438 and between combined group and control group is 6.938. This shows that there is significant difference between aerobic and combined, aerobic and control group, and between combined and control group. Therefore, the 10 weeks training has significantly improved muscular endurance of aerobic exercise group as well as the combined group. It was also found that the combined group improved muscular endurance better than the aerobic group.

Based on findings the 10 week aerobic had significant effect on some of the physical fitness. Specifically, aerobic training had significant effect on all of the health related physical fitness variables: (cardiovascular endurance, muscular strength and muscular endurance). Similarly, the combined training had significant effect on muscular strength. Combined plyometric with aerobic training improved muscular strength and muscular endurance of the combined group better than the aerobic group and control group Tadele *et al*, (2013) study similarly indicated that aerobic exercise was significantly better than anaerobic exercise in improving cardiovascular endurance muscular endurance, muscular strength and agility ($p < 0.05$).

Other similar study conducted by Mahendra,(2009) reported that a 12 week aerobic exercises improved selected health related physical fitness cardio-respiratory endurance and Mathewos, *etal* (2013) in his study reported that Moderate aerobic exercise has positive effect on improvement of health related physical fitness components namely cardiovascular endurance and flexibility of sedentary female communities.

Indeed, after 10 weeks of aerobic training and combined plyometric with aerobic training in the experimental groups, it was observed that the aerobic group was better in improving most of physical fitness variables. However, the combined group was better in improving muscular strength and muscular endurance than the aerobic group. There was also positive effect on aerobics exercise and combined plyometrics with aerobics exercise in selected health related physical fitness variables. Thus, aerobics exercise group improved better than combined plyometrics group and control group in selected health related physical fitness and physiological variables. Therefore, it is recommended that physical education teachers, fitness trainers and coaches should use aerobics training method in the development of health related physical fitness variables and for muscular strength and muscular endurance purposes used plyometric training methods for performance enhancement.

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“A Comparative Study between Aerobic exercise and Gymnastics on Selected Physical and Physiological Variables among High School Boys of 13-15 years”

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Introduction

Physical fitness may be defined briefly as the capacity for activity. It is a positive quality and it is closely related to diet, exercise, rest sleep, emotional and mental poise. It is an element which is responsible for helping a person to keep active. It can be referred to as vigor or vitality. It can be demonstrated through physical performance.

Gymnastics

Gymnastics concerns a system of physical exercises either for recreation or for promoting health and body- building. Today it is a popular sport. In earlier times gymnastics was an essential art of the training of Army recruits and highly beneficial results were obtained. It has also been used as means for the improvement of physique of children.

Aerobics

The purpose of aerobics training is to improve, at all levels, the efficiency of the Oxygen delivery system and the efficiency with the muscles produce energy. In healthy terms, the benefits to the gained from aerobic exercise are enormous and include weight loss, increased life expectancy and enhanced feeling of well being. In contrast, an improvement in your ability to exercise. An aerobically offers much loss benefit, since it tends to faster mere muscle development.

Statement Of The Problem

The purpose of the study was to analyze the selected physical and physiological variables between the Aerobic Exercisers and Gymnasts.

Hypothesis

There might be significant difference in Flexibility between the Aerobic Exercisers and Gymnasts
There might be significant difference in Agility between the Aerobic Exercisers and Gymnasts.
There might be significant difference in Resting pulse rate between Aerobic Exercisers and Gymnasts.
There might be significant difference in Breath holding time between the Gymnasts and Aerobic Exercisers.

Delimitations

This study has been conducted only 100 subjects, 50 in Aerobic Exercise and 50 Gymnastics. The study has been conducted only in High School Boys the age of 13 to 15 years. Only the following variables are selected in Physical and Physiological.

Physical Variables

Flexibility, Agility, Physiological Variables, Resting Pulse Rate Breath holding time

Methodology

Selection of Subjects

Fifty Aerobic Exercisers and fifty Gymnasts were selected as subjects at random for this study. The subjects were selected from High School Boys, Macharla, Guntur District (A.P.). They arranged in age from 13 to 15 years.

Table-1: Computation of Mean, Standard Deviation and 'T'~ Ratio for Flexibility for Independent Samples

(Separate Variance)

Sample	Mean	Pi	't' ratio	Remark
Aerobic Exercisers	9.80	4.1755	*5.0172633	
Gymnasts	13.93	4.0552		

$$Df = (N1 + N2) - 2 = (50 + 50) - 2 = 98$$

Table value for significance at 0.05 level = 1.9846

*Indicates significance at 0.05 level of confidence.

Table-II

Computation of Mean, Standard Deviation and 't'- Ratio for Agility for Independent Samples

(Separate Variance)

Sample	Mean	Pi	't' ratio	Remark
Aerobic Exercisers	11.37	0.9044	*3.7811111	
Gymnasts	12.13	0.0964		

Table-III

Computation of Mean, Standard Deviation and 't'- Ratio for Resting Pulse Rate for Independent Samples

(Separate Variance)

Sample	Mean	Pi	't' ratio	Remark
Aerobic Exercisers	75.46	3.6508	"1.895997	
Gymnasts	74.00	4.0398		

Table-IV
Computation of Mean, Standard Deviation and 't'- Ratio
for Breath Holding Time for Independent Samples
(Separate Variance)

Sample	Mean	Pi	't' ratio	Remark
Aerobic Exercisers	20.94	10.8070	*2.1627214	
Gymnasts	26.22	13.4619		

Conclusions

From the statistical analysis of the above variables, the following conclusions were drawn. The level of flexibility among Gymnasts than Aerobic Exercisers. It was found that the level of agility among the Gymnasts was greater than the Aerobic Exercisers. It was found that the resting pulse rate level of Gymnasts was less than the Aerobic Exercisers. It was found that the breath holding time level of Gymnasts was greater than the Aerobic Exercisers.

Survey career orientation of students from University of Sport Hochiminh City Applying Holland Codes

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Summary:

Research subjects included 500 students of the freshman and 3rd year of University of Sport Hochiminh City(USH). The purpose of the study “Survey career orientation of students from University of Sport Hochiminh City Applying Holland Codes” was to define a method of choosing suitable careers for USH students. Research methods in this study included literature search, social surveys, and analysis statistics.

Keyword: University of Sport Hochiminh City, career, Sport

Introduction

Career is considered means of guaranteeing human physical and mental life. Moreover, it is especially important to the young generations who are going to take charge of their nation's fate, family and themselves. However, in fact, many people suffer from unemployment or jobs of wrong majors. They feel difficult to meet requirements of their current occupation, lack of interest in and strong attachment to the chosen jobs. This causes huge waste and unreasonable distribution of human resources. Career and vocation consultancy becomes more and more focused issue today. Nevertheless, there are thoughts that “career orientation is only for high school pupils” which are unsuitable since college and university students still need career orientation [1].

Many of students from University of Sport Hochiminh City (USH) haven't had stable jobs of their right majors due to many reasons one of which is the lack of correct orientation for selecting studying majors. Scientific research as well as methodology of career orientation have not been paid with thorough and long-term investment. The most effective tool for career orientation in the world nowadays is the Holland Codes, a theory of career and vocational choice based upon personality types of John Holland – a famous American doctor of psychology [7]. The purpose of the study “*Survey career orientation of students from University of Sport Hochiminh City Applying Holland Codes*” was to define a method of choosing suitable careers for USH students.

Research Methods

2.1. The scale used

John Holland (1919 - 2008) is a PhD psychologist Americans. He is well known and most widely known through theoretical research career options. This theory is based on 8 points, including 2 first point is: Most people fall in one of six types of people, that's the kind of person 6: Realistic (the actual person - R); Investigative (who prefer to study - I); Artistic (who has his artistic - A); Social (social person - S); Enterprising (enterprising people - E); and Conventional (the civil servants - C). There are 6 operating environment corresponding to 6 types of people around, often abbreviated and called Code RIASEC Holland (Holland codes) [9].

Based on theories found, J. Holland build test cases for people who want their own understanding. Through years of development, this test of self-discovery to help people who most prominent types are implicit in its humans to orient themselves when choosing profession. J. Holland made a simple model of the environment and humans. In the past two decades, this model is the approach most influential in shaping the new assessment tools and career counseling research.

RIASEC be tested during the year 1950 - 1980 in countries such as New Zealand, Canada, the Netherlands, Switzerland, Italy, Israel, Nigeria. Since 1986 - 1995 this test is used in Belgium, China, Japan, Greece, Poland, Slovenia, Sweden, Germany, Finland, Britain, Portugal, South Africa, Peru and Taiwan [9].

To be able to use the test on career trends of John Holland, the participants will be given corresponding points from 0 points to 4 points on the questions listed Available in 6 tables, corresponding to 6 occupation groups. The end result will be a table of the highest points total of 6 pounds. Implementation of this test to take 3 steps:

Step 1: The reviews listed in each table toward the qualities and personal capacity. With each standard will have more relevance, corresponding to each of relevance, will be provided for a corresponding number of points. The corresponding score by workers and self-assessment tests scored on the following convention:

1. You never see reviews that are true for you - respectively 0 points
2. To find the right only in a few cases - the corresponding 1 point
3. You see the standard that is only half true for you - 2 points respectively
4. You see the standard that is almost true to you in most cases, only a few cases is not quite right - the corresponding point
5. You see the standard that is absolutely right for you, otherwise can not be - respectively 4 points

Step 2: For each of the points in each table, and add the sum of each table, identify the table with the highest score.

Step 3: Find the table with the highest score, the highest score that is the board's professional behavior or interests match with your high level.

2.2. Analytical methods

Reading, analyzing and synthesizing documents: Data use books, articles from domestic and foreign sources, codified knowledge concerning trends vocational choice, vocational guidance for students. Forming rationale, identify research tasks, selection methods as a basis for evaluating the results of the research study.

Investigation by questionnaire: Conduct a survey on the status by votes tend to choose occupations in student. Research questionnaire was developed based on the basis of reference tables Holland vocational test.

Interviewing experts: Using questionnaires to consult experts, managers are active in the field of sport on the opinions of experts and individuals for the questionnaire (in Likert rating system - 5 level. Results this will confirm the relevance and objectivity of the questionnaire for this study.

Statistical analysis: Uses SPSS 22.0 software to process data collected. Which uses the algorithms as descriptive statistics, t-test, ANOVA [6].

2.3. Sample

Guests can study subjects included 500 students in 3rd year (Course 33) and freshman (Course 35) of the school. In which the male majority (67%), students more courses 33 (57%), student of Physical Education biggest proportion (37.8%) and finally the students where families in the South is the highest (50%).

iii. Results

3.1. Career orientation of students from USH

3.1.1. Assess the reliability of the scale

Although this scale is the approach most influential in the formation of new assessment tools and career counseling research. However, due to the peculiarities of the time and the object of study, so the author has conducted testing the reliability of the scale before entering into formal study.

Preliminary study, authors conducted consultation of managers and professionals operating in the field of education on the use of career orientation test of John Holland as research scale. Experts are in agreement and rated at a high level for each variable used after author completion of the term adjusted accordingly after the translation.

Random survey of 100 USH students on the scales were adjusted in the opinion of experts. After collecting the data, researchers remove these questions is not enough reliability in the survey sample. Cronbach's Alpha results showed that all 54 variables were observed to reach high reliability coefficients, and well, that is > 0.8 (Nunnally & Burnstein, 1994). Specifically, Cronbach's alpha of the group's R 0801, the 0850 group I, group A is 0821, the group S is 0816, the 0857 Group E, Group C is 0818.

Corrected Item-Total Correlation of these variables were > 0.3 for 54 observed variables should have sufficient reliability and consistent with this study.

3.1.2. The final result career orientation of students from USH

Enumerating choice occupational groups of students participated in the survey, the results are as follows:

Table 3.1. Tendency to choose the professional group of students.

Occupational group	Total score	Quantity	%	Ratings
Group S	1197	267	53.4	1
Group C	1145	66	13.2	2
Group I	1131	48	9.6	3
Group E	1115	47	9.4	4
Group R	1062	45	9.0	5
Group A	812	27	5.4	6
Total		500	100	

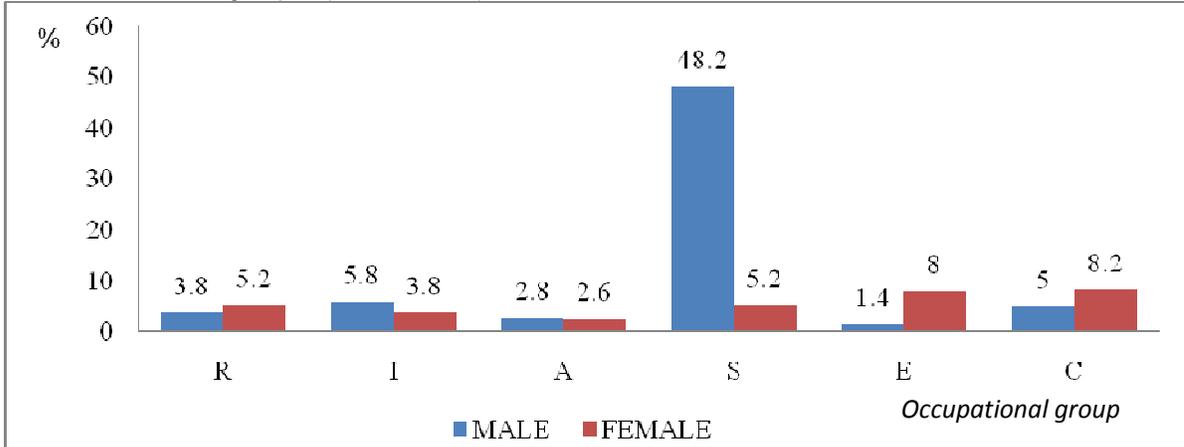
According to the results shows six occupational groups Students are selected survey participants. Students in that group are selected occupations at most craft group S (Social) has the highest number totaled 1197 points, with 267 Students selection (accounting for 53.4%). Group C (Conventional) ranked No.2 totaled 1145 points, with 66 Students choose (accounting for 13.2%). Group I (Investigative) and E (Enterprising) has approximately the same number of points respectively occupy the next two positions, the first group totaled 1131 points, with 48 students choose (accounting for 9.6%), reaching a total 1115 group E (Enterprising) students selected points with 47 (accounting for 9.4%). The next group is the group R (Realistic) totaled 1062 points, with 45 Students choose (accounting for 9.0%). Lowest group A (Art) with 812 points, with 27 Students choose (5.4%).

3.2. The difference between trend career options after graduation Students according to demographic factors.

To learn more about these groups tend to choose careers Students, from the personal characteristics such as gender, school, discipline, where the family lives, the authors conduct a difference average through inspection of occupational groups.

3.2.1 Gender

Shows that male students choose at most craft group S (Social), while women are most concerned Students vocational group C (Conventional).



Biểu đồ 3.2. Trends selection of occupational groups by gender of the students.

Carry out the differences in the tendency to choose the male students and female students with professional groups by means of testing the two independent samples t-test. Analysis results showed that in the vocational group R, I, A, C, E most of the value of Sig. are greater than 0.5. Thus, we can conclude there is no difference between male students and female students in choosing the vocational group R, I, A, E, C after graduation.

Table 3.2. Differences in career choices by gender group of students

Occupational group	Gender	Mean	P
Group S	Male	1.83	**
	Female	1.52	**

Ghi chú: *: $P < .05$; **: $P < .01$

Group S (Social) value Sig. less than 0.05. Statistically significant at 95%, then you are subject to differences between male students and female students on average values when choosing vocational group S (Social). In particular, male students choose vocational group S (Social) (M = 1.83) higher than female students (M = 1.52).

3.2.2. Course

Results showed that students choose 3rd years at most craft group S (Social), followed by vocational group C (Conventional) and the lowest is vocational group E (Enterprising). First-year students also particularly interested in job group S (Social) followed by job group E (Enterprising) and the lowest job groups A (Art).

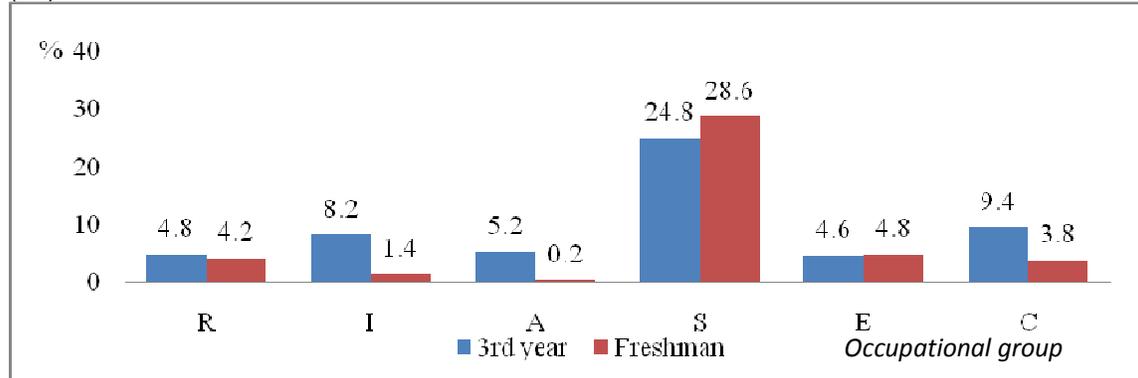


Figure 3.3. Tend to choose careers follow the course of students

Most of the value of Sig. are less than 0.05. Statistically significant at 95%, it can be concluded there is a difference between the 3rd year students and freshman students on the average values when choosing six occupational groups.

Table 3.3.

Differences in the selection of occupational groups of students on the course

Occupational group	Course	Mean	P
Group R	3 rd year	2.32	**
	Freshman	1.87	**
Group I	3 rd year	2.40	**
	Freshman	2.08	**
Group A	3 rd year	2.41	**
	Freshman	1.33	**
Group S	3 rd year	2.45	*
	Freshman	2.32	*
Group E	3 rd year	1.33	**
	Freshman	2.11	**
Group C	3 rd year	2.42	**
	Freshman	1.99	**

Ghi chú : *: $P < .05$; **: $P < .01$

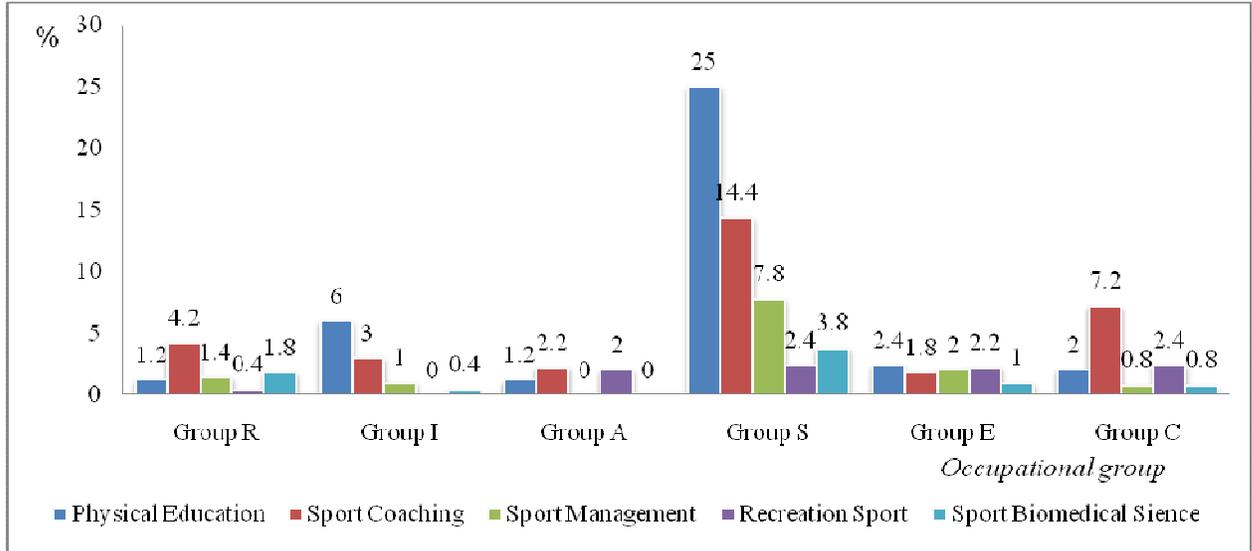
Students 3rd year in vocational group selected S (Social) is the highest (M = 2.45), followed by the selection of craft group C (Conventional) (M = 2.41), students 3rd year selected courses particularly vocational group A (Art) (M = 1.33).

Freshman selection at most craft group S (Social) (M = 2.32); followed by job group E (Enterprising) (M = 2.11); freshman were selected especially vocational groups A (Art) (M = 1.33)

3.2.3. Major

The selected students of Physical Education at most craft group S (Social), followed by the professional group I (Investigative) and lowest in the vocational group R (Realistic). Students studying Sport Coaching, the professional group most concerned about is the S (Social), less student Sport Coaching career choice is the group E (Enterprising). Students, who majoring in sports management are the most selected group S (Social), followed by job group R (Realistic). Students that majoring in sports and entertainment, the professional group interested in S (Social) is the highest and the lowest was located in group I (Investigative). And students Sport Biomedical Science, the emphasis on vocational group S (Social) than other groups, and at least interested in job group A (Art)

The result is fully consistent with the original choice of Physical Education student and Sport Coaching. Because of the goals and curriculum of the school for two sectors Physical Education and Sport Coaching out who is capable of language, teach, care for, train others, suitable for a career in professional group S (Social). For students whose are studying Sport Biomedical Science and Recreation Sport, have a change in the decision of profession. Instead of choosing the vocational group I (Investigative), C (Conventional), E (Enterprising) to match the original choice, this professional group has not received the attention and learn from students. Most of the students are not interested in moving industry capacity and demand of themselves.



Graph 3.4 Trends in selected occupational groups by discipline of students.

The value Sig. are greater than 0.05, with a 95% significance level, so that, we can conclude there is no difference in choosing the vocational group of students.

3.2.4. Family residence

Enumerating selected number of occupational groups students according to the residence of the family. The results showed that most of the professional groups are students interested in the 3 regions selection. In which students choose the most Northern vocational group S (Social), followed by vocational group C (Conventional) and the least chosen is the professional group I (Investigative). And finally students are most attracted in Central college group S (Social) and the lowest job groups R (Realistic). Students in the South that the most concern is vocational group S (Social) and have the minimum involve in job group A (Art).

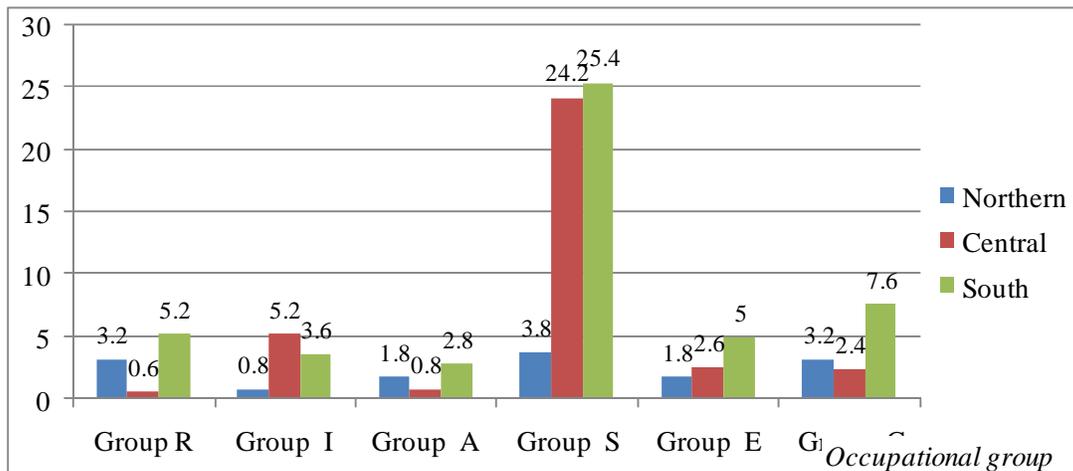


Chart 3.5. Trends selection of occupational groups according to the family residence of students

Conduct analysis of variance factor (ANOVA) to test the choice of occupation groups where students have different family.

Table 3.4: Difference in the selection of occupational groups according to where the family lives of students

<i>Occupational group</i>	F	P	Post-hoc (Scheffe)
Group R	4.524	.000*	(μ_1, μ_3) > (μ_3, μ_2)

Ghi chú : *: $P < .05$; **: $P < .01$

μ_1 : South μ_2 :Central μ_3 : Nothern

The results of analysis of variance factor (one-way showed no difference statistical significance, $p < .05$) of students from diverse places for vocational choice groups R (Realistic). Results scheffe testing showed that job group R ($p = .000 < .01$) were students from the North and the South elect more students in the Central area.

V. Conclude

Researchers have been testing the reliability of the test career orientation John Holland for USH students through the surveys of experts and students. By analyzing the data collected, researchers found that after graduation students will want to be doing the job in the Job group S (Social) trades such as pedagogy; lecturers; athletics coach; counseling - career; social work, public health... The choice is entirely consistent with the student is studying Physical Education and Sport Coaching, also for Sport Management, Recreation Sport, Sport Biomedical Science there is no compatibility between the desire of the student occupation voimuc target members, training programs of the university. This result is the basis for building solution systems contribute to improving the effectiveness of vocational school students.

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Effect Of Gender Differences On Cognitive Ability

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Abstract:The purpose of the present study was to find out the effect of gender differences in cognitive abilities among the 10 to 12 years of school children in the state of West Bengal. Method: The sample consisted of 300 hundred of boys and 300 hundred of girls at the age categories of 10, 11 and 12 years were taken for the study. The number of subjects for each age group was 100 boys and 100 girls for any age group. These subjects were selected in the method of systematic random sampling method. The cognitive ability were measured by choice reaction time CRT (Singer, 1968) and kinesthetic perception (Johnson, 1970) by distance perception jump (DPJ), padesterial kinesthetic test of size (PKTS) and vertical linear space test (VLST). The statistical procedure were used such as Mean \pm SD, ANOVA, and the inter-group comparison i.e. t-test for the study. Results: The Mean \pm SD, comparison t-test and graph were stated in the study of cognitive ability variables with gender. The study findings revealed that the boys were better performance than girls in DPJ and reverse in CRT at 0.05 level of significant. In PKTS boys were better perform than girls and in VLST better performance of boys than girls but not significant as per data. Conclusion: The study revealed that gender differences exist in CRT and DPJ, but not in the remaining cases. Boys perform better in DPJ than the girls and vice versa in CRT.

Keywords: Cognitive ability, measurement variables i.e. CRT, DPJ, PKTS and VLST, boys, girls.

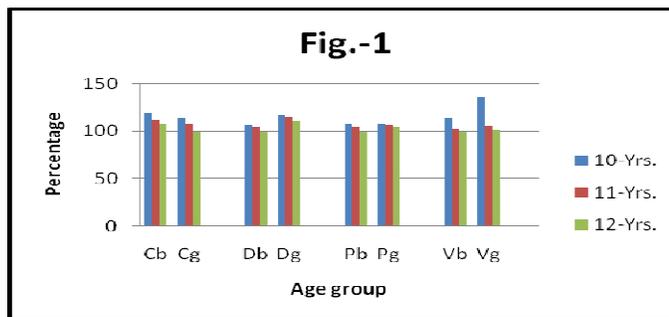
Introduction: The term 'kinesthetic perception' is an important aspect of physical education to predict cognitive level of an individual. It is the ability to perceive the position, effort and movement of parts of the body or the entire body during muscular action (Johnson, 1970). McBride (1992) was the first to define reflective thinking that is used to make reasonable defensible decisions about movement tasks and challenges and he proposed a four-phase model to link critical thinking with physical education that includes the following steps: i) the learner engage in cognitive organization, ii) the learner engage in cognitive action, iii) the process leads to cognitive outcomes, and iv) the process leads to psychomotor outcomes. Lipman (1988) first defined critical thinking as skillful responsible thinking that facilitates good judgment because i) it relies upon criteria, ii) self-correcting, and iii) sensitive to context. Critical thinking therefore is considered to be a form of cognitive accountability based on concept formation in which the learner notes relationships and makes conscious decisions based on established criteria. Kirkendall (1969) measured forty-five variables on pre-adolescent children (n=205). The variables represented from the intellectual domain, the motor domain and the personality domain. It was found that all three categories of boys and girls, intelligence and the motor performance variables were consistently correlated in a positive direction with the intellectual variables. Hodgkin's (1962) tested 480 female subject's age ranging from 6 to 84, discovered that reaction ability improved from childhood to nineteen to twenty-six and decreased afterwards. Goodenough (1935) tested the reaction times of 246 children from two and half to eleven and half years of age. She observed a decrease in reaction time with advancement of age. Cognitive ability is the capacity to perform higher mental processes of reasoning, remembering, understanding and problem solving. (college.cengage.com/psychology-02.12.2013).

Table-2: Inter- group comparison (t-test) of cognitive variables in respect to gender

Variables	Gender	Mean	Mean Difference	S. Error	t-ratio
CRT(sec)	Boys	0.58	0.03	0.004	7.5*
	Girls	0.55			
DPJ(inch)	Boys	5.29	0.51	0.119	4.285*
	Girls	5.80			
PKTS(inch)	Boys	4.58	0.10	0.117	0.855 ^{ns}
	Girls	4.68			
VLST(inch)	Boys	3.35	0.14	0.306	0.458 ^{ns}
	Girls	3.21			

$t_{0.05} 598 = 1.96$; *Significant at 0.05 level; ns=not significance

The study was significant in gender differences in CRT like Szinmai et al. (2005); Silverman (2006); (Der and Deary, 2006); Karia et al, (2012). In fig-1, it revealed according to gender that the girls were better in CRT than the boys. Various investigators like Verma and Chadha(1980), Pandey and Devdas (1991), Sharma et al. (2013) were found that school-going children were superior in cognitive ability than the non-school going children and the females have better verbal-ability than males . Nutrition plays an important role in cognitive abilities (Wallentin, 2009; Kesari et al. 2010).It is revealed from the findings of the study that the DPJ of the subjects found to be better performance according to gender. In fig-1, the researcher was found that the boys were better performance than the girls on DPJ.



The study revealed that the PKTS and VLST were not existed statistically significant but in fig.-1 indicates that the boys were better performance than the girls for both the cases. (In fig.-1, C stand for CRT; D for DPJ; P for PKTS; V for VLST; b for boys and g for girls). Kinesthetic sense develops early but it remains stable until fifty and after it deteriorates (Hmilton, 1937). The researcher like young (2013) were found that there is a relationship between motor ability and cognitive ability in the normal human subject.

Conclusion:

The study was confined to the cognitive abilities of 10 to 12 years of old age children. In CRT and DPJ there were gender differences exist but not in the remaining cases such as PKTS and VLST. Boys perform better in DPJ than the girls and for CRT it was vice-versa.

Acknowledgement:

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Recommendation:

Similar Study can be conducted among students in respect of other age groups and also on different population.

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Learning Preferences Of The Physical Education Students

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Abstract

Objective of the study was to examine the Physical Education students' learning preferences. The students of the Physical Education Faculty at the Paweł Wołodkowicz University College in Płock participated in this study. Their learning preferences were assessed with VARK questionnaire (version 3.0 – 2001), containing 13 questions, designed according to the model of Neil D. Fleming. The obtained results showed that VARK proved very useful in the distinguishing sensory modalities preferred by the examined students. Multimodal preferences prevailed in the examined group (67.8%). Out of unimodal preferences, the majority of students preferred aural (A), and kinesthetic (K) learning styles. Strengths of the single preferences proved diversified: from very strong (8.0%), strong (8.5%) to weak (15.2%). VARK questionnaire proved to be useful instrument for the assessment of the students' learning preferences.

Key Words: learning style; learning preferences; VARK questionnaire; physical education students.

Introduction

Sensory model of the learning style VARK^[1] is worthy of the particular notice out of the numerous models of the learning styles for being a foundation for developing of the research instruments enabling to recognize learning preferences^[2, 3, 4, 5]. VARK model was developed by Neil D. Fleming from New Zealand^[6, 7]. Fleming defined learning style as: "person's feature and preferred way of obtaining, organizing, and thinking about information"^[7] (p. 1).

VARK is an acronym, which refers to the first letter of the four sensory modalities used in the learning process: **V**isual (symbolic), **A**ural, **R**eading (reading of the written text), **K**inesthetic^[8] (p. 78).

According to the VARK system, some learners prefer visual learning style. However, there are the learners who learn the best from information presented in the symbolic visual form (sensory preference: V) and those who prefer reading of the written text (sensory preference: R), while some people learn best from hearing information (sensory preference: A). Large group of learners effectively learn from doing (kinesthetic sensory preference: K). There are also learners using various combination of their senses for learning.

Visual learners (V) learn the best from maps, diagrams, drawings, and schemes, various symbolic markings, like arrows and circles, and hierarchic systems, e.g. cognitive maps. They use different bright colors for learning. Prefer textbooks with a lot of diagrams, drawings etc. Visual learners willingly listen to the teacher whose language is picturesque and who gesticulates a lot.

Aural learners (A) learn the best from hearing information. They easily absorb knowledge in the classes, various recordings, and talk with other learners of the same preference. They willingly explain their ideas to the schoolmates. Aural learners like to discuss different topics with their teachers and schoolmates. They are present at each didactic class; actively participate in the focus groups and other teaching forms. Aural learners loudly read their notes from the classes. They talk to other students to hear their own understanding of the said topic.

Reading learners (R) prefer reading information presented in the form of the written text. They often use their own notes, textbooks, vocabularies, encyclopedia, and documents, web pages as well as definitions, and quotations. Learners of reading preference learn the best from taking notes and systematic reading them, reading texts from the books, and other knowledge sources.

Kinesthetic learners (K) prefer hands-on activities and life experience. In learning process, such a kinesthetic learner engages all his senses, i.e. see, hearing, touch, sight, taste, and smell. Moreover, they willingly use different didactic media. Kinesthetic learner likes to work in the laboratory. He/she appreciates the ideas, which may be realized by any practical actions. In such a way he/she accesses the knowledge more quickly and better understands it. Sensory-motor activity is for kinesthetic learner of an utmost importance for learning.

VARK questionnaire was developed by Fleming and became very popular in several countries. It is successfully used in: New Zealand, Poland, Spain, USA, Australia, Sri Lanka, Jordan, Saudi Arabia, United Kingdom, Nepal, India, and Iran [7, 9, 8, 10-20]. The Polish version of VARK questionnaire (3.0) was developed by Szejnberg after obtaining permission from the original developer in 2001 [7, 8]. Its on-line version is also available [21].

According to the model developed by Fleming, learners may use sight and hearing for learning as well as various hand-on actions. They may also use different sensory combinations.

Objectives

It was interesting which sensory preferences are characteristic for the undergraduate students of the first and second year, for which VARK questionnaire was used to evaluate students' preferences.

This study was aimed at gathering information on the students' learning preferences. The authors looked for the answers for the following research questions:

Which learning preferences (unimodal or multimodal) out of Fleming's model are characteristic for the students of the Paweł Włodkowic University College in Płock?

What percent of the examined students are characterized by the unimodal learning preferences and what is their strength?

Which of the multimodal learning preferences are characteristic for all examined students?

Materials and methods

The study was carried out in November, 2015. It included undergraduate students of the first and second year of the Paweł Włodkowic University College (Faculty of Physical Education). The total of 59 students participated in the study, including 48 men (81.4%), aged between 19 years and 37 years [M = 21.94; SD = 4.06], and 11 women (18.6%), aged between 19 years and 30 years [M = 21.73; SD = 3.19].

VARK questionnaire (version: 3.0, 2001) was distributed to the students, who were instructed to answer all 13 multiple-choice questions. Particular answer refers to a different sensory preference. Visual sensory modality was divided by the questionnaire developer into symbolic (option a) and text (option c). The remaining two options of an answer referred to the aural (b) and kinesthetic (d) preferences [8]. Examined students could mark more than one answer to each question. The student chose these variants of answers, which suited his/her preference best, i.e. may choose all four variants, combination of three or two variants of the answer. They may also indicate only one answer, the most characteristic for him/her. It should be emphasized that VARK questionnaire is not a test. Variants of the answers were not arranged alphabetically in some questions. Moreover, the examined students chose one of three variants in questions 4, 8, and 9.

3.1 Study procedure

Through using of VARK questionnaire, one of 15 possible learning preferences may be recognized, i.e. one of 11 multimodal preferences (VARK, ARK, VRK, VAK, VAR, RK, AK, AR, VK, VR, and VA) or one of 4 unimodal preferences: V, A, R or K.

Procedure of the learning preference recognition is described below [7].

(1) Total score for all marked answers: (a), (b), (c), and (d) should be calculated and filled into the following template table.

Table 1. Template for calculations of learning preferences.

V	A	R	K	
...	
a.	b.	c.	d.	Total:(a + b + c + d) = _____

(2) Encircle the highest score V, A, R, K (if there are few of the same highest scores, all should be encircled).
 If the total score is lower than 17, score/scores lower by 1 than the highest score should be encircled. Encircled letters indicate multimodal learning preference.
 If total score is between 17 and 22, score/scores lower by 1 or 2 than the highest score should be encircled. Encircled letters indicate multimodal learning preferences.
 If the total score is between 23 and 30, score/scores lower by 1, 2 or 3 than the highest score should also be encircled. Encircled letters indicate multimodal learning preferences.
 If the total score is equal to 31 or higher, score/scores lower by 1, 2, 3 or 4 than the highest score should also be encircled. Encircled letters indicate multimodal learning preferences.
 Strength of the unimodal learning preference is calculated, using scores showed in Table 2.
 Table 2. Scores used for calculation of the unimodal preferences ⁷.

Total score	Difference between two highest scores			
	Lower than 17	4 or more	3	2
17-22	5 or more	4	3	Less than 3
23-30	6 or more	5	4	Less than 4
Equal to 31 or higher than 31	7 or more	6	5	Less than 5
	Preference			
	Very strong	Strong	Weak	Multimodal

Results

The obtained results were statistically analysed. Both number and percent of the students, who had shown unimodal and multimodal learning preferences and strength of each unimodal preference, are shown in table 3. The number of students of the said preference is given in the parentheses in the column (4) following the strength.

Table 3. Number and percent of the examined students showing unimodal and multimodal learning preferences with the strength of the unimodal preference (N=59)

Learning preference	N	%	Strength of unimodal preference
V	3	5,1	Very strong (2); strong (1)
A	7	11,9	Very strong (2); weak (5)
R	2	3,4	Weak (2)
K	7	11,9	Very strong (1); strong (2); weak (4)
Total	19	32,2	Very strong (5); strong (5); weak(9)
VARK	5	8,5	
VRK	3	5,1	
VAK	8	13,6	
ARK	6	10,2	

VR	1	1,7
VA	4	6,8
VK	3	5,1
AK	8	13,6
RK	1	1,7
AR	1	1,7
Total	40	67,8

Table 4 contains comprehensive specification of the number and percent of students, who had identified unimodal and multimodal learning preferences.

Table 4. Number and percent of students of identified unimodal and multimodal learning preferences

Learning preferences	n	%
Unimodal: V, A, R or K	19	32,2
Multimodal – combination of 4 different preferences: VARK	5	8,5
Multimodal – combination of 3 different preferences: VRK, VAK and ARK	17	28,8
Multimodal – combination of 2 different preferences:VA, VR, VK, AR, AK, and RK	18	30,5
TOTAL	59	100,0

An analysis of the collected data shown in tables 3 and 4 indicates that the examined group of the physical education students was quite diversified as far as learning preferences are concerned. Examined students were characterized by both unimodal and multimodal learning preferences. None, however, had multimodal preference VAR.

4.1 Unimodal learning preferences

Slightly over 32% of the examined students preferred unimodal learning style (see Tables 3 and 4). Preferences A and K were identified by 11.9% of all responders. Out of 7 students with A preference, it was very strong in 2 and weak in 5 students. Very strong preference K was characteristic for 1 student, strong for 2, and weak for 4 students. Preference V was reported by 3 responders (5.1% of all examined). In this group, this preference was very strong in 2 and strong in 1 student. Weak R preference was found in 2 responders (3.4% of all examined). It should be stressed that students of the unimodal learning preference typically have problems with studying in the university or higher school. Teachers' strategy used in the classes is not always compatible with student's learning style.

4.2 Multimodal learning preferences

Multimodal learning preferences were noted in nearly 68% of the examined students (see Tables 3 and 4). Learning preferences described by the combination of two different learning styles (VA, VR, VK, AR, AK, and RK) were characteristic for the majority of the students (30.5%). In 28.8% of responders, reported learning preferences happened to be three combined different learning styles (VRK, VAK, and ARK). VARK preference, i.e. combination of four learning styles was recorded for 8.5% of all examined students.

Discussion

Despite the fact that students' learning preferences are of interest in several countries of the world [2, 22, 3], including Poland, there are limited numbers of papers in Polish scientific literature, except [10], which used sensory model VARK developed by Fleming [7]. One of the studies which used VARK questionnaire was performed by Szejnberg [23]. This study included 605 pupils of the 6th class of the primary schools and 1218 pupils of the 3rd class of the high schools in the Lower Silesia District [23]. The obtained results showed that the examined pupils were much diversified in relation to their learning preferences. Pupils had both unimodal and multimodal style of learning. Percentage of the pupils, who had unimodal or multimodal style of learning, was quite similar in both types of schools. For instance, 31.7% of all pupils of the primary schools and 31.6% of high schools preferred unimodal style of learning: V, A, R or K. It was also found that multimodal learning preferences were characteristic for 68.53% of pupils of the primary and 68.4% of the high schools.

An analysis of the data collected in the current study, provided valuable empirical material, which may be utilized in the development of the teaching programs for the physical education college. It was obvious that the students' learning preferences were quite diversified. They should be taken into consideration not only by the students but also by teachers and lecturers. Student's knowledge about their learning preferences may facilitate a better choice of the proper learning strategies, while teachers may diversify their teaching strategies, which will guarantee the students to achieve desired effects of the study. Teaching performed by only feeding techniques may prove inadequate to obtain satisfactory effects. Similarly, teaching with the use of techniques directed solely to the students' practical activity (kinesthetic) may fail too. Every student is different; some like to see, what he has to learn in the form of tables, diagrams or schemes, while another prefer to hear information. Other students would like to use textbooks or written information. There are also students, who prefer to do various motor activities during the classes.

Teacher should take care of facilitating learning in the students. The style of providing information should be understandable to all students. Teacher should know to which sensory system to refer to during a particular presentation of teaching materials. He/she should also know whether proposed teaching strategy is the most suitable for the students.

Students as the individuals responsible for their learning should also take care of improving the learning skills. Using the guidelines, on which is the best learning style depending on the learning preferences may prove to be very helpful. Summing up, it may be mentioned that assurance of the high level of university education requires:

recognition of the students' learning preferences;

identification of each teacher's own teaching style and assessment of its effect on the choice of the suitable didactic methods;

adjustment of teaching strategies to the learning styles of the majority of students in a particular year of studies; evaluation (regular and systematic) of both teaching and learning process.

Targeting the improvement in the education quality, one should not forget about appropriate classrooms and creation of the positive social climate [24, 25].

Conclusions

An analysis of the collected data enabled to draw the following conclusions:

1. VARK questionnaire proved to be very useful instrument to identify students' learning preferences. Physical Education students at the Paweł Wołodkovic University College in Płock had both unimodal and multimodal learning styles.

About 32.3% of all examined students had unimodal learning preferences. Their strength was diversified, ranging from very strong (8.5%) to weak (15.2 %) in all examined students.

Multimodal learning preferences were typical for nearly 68% of the examined students. The majority of them (30.5%) had bimodal preferences: VA, VR, VK, AR, AK, and RK. About 29% of the examined students had trimodal preferences: VRK, VAK, and ARK, while 8.5% of students – quadrimodal VARK.

No one had exhibited the trimodal preference VAR.

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Comparative Study of Nutritional Status among Female Sportspersons of Rashtrasant Tukadoji Maharaj Nagpur University

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Abstract

The purpose of this study was to evaluate the differences in Nutritional Intakes of female sportsperson who participate in Rashtrasant Tukadoji Maharaj Nagpur Inter-collegiate Sports competitions. Three sports (Basketball, Handball & Volleyball) were selected for the purpose of this study. Thirty women from each sport (basketball, handball and volleyball) were selected by simple random sampling methods from various colleges across the Nagpur city. The Nutritional status (protein, carbohydrate, fat and total calorie intake) of intercollegiate female players (basketball, hand ball and volleyball) were assessed by using Standard test. Three-days Diet Recalled method was used to assessed the Nutritional Intake of the female sportsperson. The result shows that there is a significant difference ($P \leq 0.05$) in Nutritional status among intercollegiate female Basketball, Handball and Volleyball players, the overall nutritional intake was highest among Basketball (2035.45 ± 204.5 Kcal) players and least (1830.50 ± 105.9 Kcal) among Volleyball players.

Key Words: Nutritional Status, Female Sportsperson etc

Introduction

The participation of girls in sports is increasing day by in India. Girl athletes (Mary Com, P V Sindhu, Sania Mirza, Saina Nahwal, Dipa Karmakar and Dipika Kumari) have brought laurels to the country at National and International level. Due to the wide range of physiological demands a large proportion of female athletes regularly do not meet DRI's for a number of macro and micronutrients. Thus, female sportsperson are facing the challenges of meeting the nutrient requirements for growth and development in addition to sport performance. Athletes need to consume adequate energy during periods of high-intensity and/or long duration training to maintain body weight and health and maximize training effects. Low energy intakes can result in loss of muscle mass; menstrual dysfunction; loss of or failure to gain bone density; an increased risk of fatigue, injury, and illness; and a prolonged recovery process. Therefore, the present study was undertaken to assess the nutritional status of intercollegiate women basketball, hand ball and volley players.

Material and Methods

Participants

Thirty women from each sport (basketball, handball and volleyball) were selected by simple random methods from various colleges across the Nagpur city.

Variables

The Nutritional status (protein, carbohydrate, fat and total calorie intake) of intercollegiate women basketball, hand ball and volleyball players were assessed by using Standard test. Three-days Diet Recalled method was used to assessed the Nutritional Intake of the female sportsperson.

Results and Discussion

The Nutritional status and physical fitness were compared by applying statistical technique namely Analysis of Variance (ANOVA) among basketball, hand ball and volleyball players.

Table 1. Descriptive Statistic of Nutritional Status of R.T.M. Nagpur University Inter-collegiate female Basketball, Handball and Volleyball Players

S No.	Variables	Basketball (N=30)	Handball (N=30)	Volleyball (N=30)
		Mean±SD	Mean±SD	Mean±SD
1	Protein (Kcal)	295.05±24.97	294.91±21.87	269.19±21.29
2	Fats (Kcal)	415.06±55.73	344.79±47.28	349.56±44.95
3	Carbohydrate (Kcal)	1373.78±103.19	1324.51±110.4	1218.82±102.7
4	Total Calorie Intake (Kcal)	2035.45±204.5	1909.03±194.3	1830.50±105.9

The Descriptive statistics were computed on the data of nutritional status to observe the nature of the data. The finding of the descriptive statistic (Table 1) shows that the women sports person playing different sports exhibits different nutritional profiles, the reason for different descriptive profiles in nutritional status may be due to the different nature and demand of these three sports.

Table 2. Analysis of Variance (ANOVA) for the Comparison of Nutritional Status among Volleyball, Basketball and Handball players (Female) of R.T.M. Nagpur University

Variable	Variance	Sum of Squares	df	Mean Square	F
Protein	Between Groups	13306.215	2	6653.107	12.79*
	Within Groups	45254.899	87	520.171	
Fats	Between Groups	92484.940	2	46242.470	18.83*
	Within Groups	213549.419	87	2454.591	
Carbohydrate	Between Groups	376094.252	2	188047.126	16.89*
	Within Groups	968487.532	87	11132.041	
Total Calories	Between Groups	641359.634	2	320679.817	10.59*
	Within Groups	2634534.181	87	30282.002	

*Significant at 0.05 level

The result (Table 2) shows that there is a significant difference in Nutritional status among intercollegiate female basketball, handball and volleyball players, the overall nutritional intake was highest among basketball players and least among volley ball players. The ANOVA test is significant ($P \leq 0.05$) for protein (F value=12.79), fats (F value=18.8), carbohydrate (F value=16.89) and total calories intake (F value=10.59). Further pair wise comparison was made by using post hoc test (Least significance difference), which reveals that there is significant difference in protein intakes of basketball and volley ball players (Mean difference value:25.86) at 0.05 level. There was also a significant difference in protein intake of volley ball and hand ball players (Mean difference value: 25.72) at 0.05 level, but there is no significant difference in protein intake between basketball and handball players. Further, there is significant difference in fat intakes between basketball and hand ball women sportspersons (Mean difference value:70.26), there was significant difference in fats intake of basketball and volleyball (mean difference value;64.49) at 0.05 level, and, there was no significant difference in fat intake between volleyball and hand ball players. There is significant difference in carbohydrate intake between basketball and volley ball players (Mean difference value:154.95) at 0.05 level. Further, there is significant different in carbohydrate intake between volleyball and hand ball players (Mean difference value;105.68) at 0.05 level, but there is no significant difference between basketball and handball. There is significant difference in total calories intake between basketball and hand ball players (Mean difference value; 126.43) at 0.05 level. Further there is significant difference between basketball and volley ball player (Mean difference value; 204.916) at 0.05 level, but there is no significant difference between handball and volleyball players.

The reasons for the difference in the nutritional intakes/profile might attribute to the nature of sports, as Basketball player requires lots of energy to get up and down from the basketball court. The basketball is among the fastest sports, basketball player is required to be trained very rigorously, so it demand more energy as compare to the other two sports (hand ball and volley ball), whereas volley player is comparatively less exhaustive sports as volley ball players don't need to run more as compare to handball and basketball players.

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Study on Morphological and Psychological Characteristics of Basketball, Handball and Volleyball male Players in Relation to Game Performance

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Abstract:

Introduction: Man has through the ages been bellicose, an ambitious animal in the universe with a tendency to conquer the highest as much as possible. From monkey to homosapien he has survived in this universe by fighting with other animals in order to occupy the position of being the emperor of the planet. When he evolved into complete human being as we find him now, he continued his congenital attitude of fighting against his own fellow being not only physically but also psychologically and intellectually, where survival of the fittest was the only motto. By nature human beings are competitive and ambitious for excellence in all athletic performance. Sport is a highly organized form of play and play is a general innate tendency. Play is very important for the preservation, growth and development of an organism. From its very simple form, today sport has emerged into a highly organized activity of human society (Dr. M.L. Kamlesh and M.S. Sangral, 1980).

Purpose of this study: is to investigate the selected morphological, skill test and psychological Characteristics among High School state (14 to 16 years), Junior college state (17 to 18 years) and inter-University (above 19 years) players participating in Basketball, Handball and Volleyball male players **Methodology:** Total of 270 subjects from High School state (14 to 16 years) (90), Junior college state (17 to 18 years) (90) and inter-University (above 19 years) (90) players participating in Basketball, Handball and Volleyball male Players.

Result: In the Factor analysis Inter University Basketball male players Among the Thirty six Morphological variables careful examination of the table suggests that Ten (10), in Handball Eight (8) and in Volleyball Nine (9) components were to be identified, In the Factor analysis PUC state level Basketball male players Among the Thirty six Morphological variables careful examination of the table suggests that Eleven (11), in Handball Eleven (11) and in Volleyball Ten (10) components were to be identified, In the Factor analysis High School state level Basketball male players Among the Thirty six Morphological variables careful examination of the table suggests that Twelve (12), in Handball Eight (8) and in Volleyball nine (9) components were to be identified.

In morphological, psychological and game performance of Inter university basketball male players Fat (0.714⁺⁺) is significantly positively correlated with the game performance at 0.01 level, body density (-0.387⁺) is significantly negatively correlated with the game performance at 0.05 level, in Inter-university Volleyball Sitting height (-0.385⁺) is significantly negatively correlated with the game performance at 0.01 level, In PUC state level Handball male players thigh Girth (.389⁺), is significantly correlated with the game performance at 0.05 level, In PUC state Handball male players Sub scapula skinfold (0.367+) is significantly correlated with the game performance at 0.05 level, femur width (0.562++) is significantly correlated with the game performance at 0.01 level, In High School state Basketball male players Mid Calf Skinfold (0.387+) is significantly correlated with the game performance at 0.05 level and In High School state Handball male players Thigh Girth (0.389⁺), is significantly correlated with the game performance at 0.05 level.

Conclusion: From this study it was concluded that there was a significant relationship of Morphological and psychological variables with game performance of Inter university, PUC state level and High school State level basketball, handball and volleyball male Players. The results concluded

the said variables were influenced to improve the skill and game performance of basketball, handball and volleyball male Players.

Keywords: Morphology, Psychology, skill test, correlation

Introduction

The word 'Physical Education' is derived from two separate words, 'Physical and Education'. The plain dictionary meaning of word physical is 'relating to body', it may relate to any one or all of the bodily characteristics. It may be physical strength, physical endurance, physical fitness, physical appearance or physical health. Evolution of human life started with the movement. Human beings have been very active and creative by nature and physical activity has been part of their life all along since evolution. For primitive man, search for food and shelter was the first activity. This first physical activity was necessitated by his instinct for survival. Physical activity was also the first mode of communication; it was also a means of expression. As human beings evolved culturally, emotionally, socially and physical activity also involved.

As the story become more and more complex leading towards the modern age, physical activity came to be recognized, organized and supervised from of education, was termed as physical education. The importance of physical education and activity was recognized by Plato when he said, "Lack of activity destroys the good conditions of every human being, while movement and methodical physical exercise save it and preserve it". When human movement is combined with the universal drive of play, the combination forms one of the most powerful education media - the physical education. In performance sports, competition provides the means by which one can show one's worth by competing successfully. Consequently sports competitions have triggered off a vigorous competition in research on sports physiology, sports psychology, sports training, sports nutrition and sports medicine. Competitive sports have brought into sharp focus many methods for improvement and achieving high level performance. Everywhere efforts are on to set up research laboratories so that ways and means could be found out to access and accelerate human performance in sports.

Sarachandra (March, 2014) studied on anthropometric dimensions of basketball and volleyball players. To achieve the purpose of the study eighty men intercollegiate players, forty basketball players and forty volley ball players were selected as a sample for the study. The data in respect of anthropometric dimensions were collected as per the standard procedure. The collected data were analyzed by using 't' statistical technique with the help of 19th version of SPSS. The results of the study shows that, there exists significant mean difference between basketball and volleyball players in the selected anthropometric dimensions, viz., height, arm length, chest girth, thigh girth, calf girth, there were no significant difference leg length.

Muratovic; Vujovic and Hadzic (July 2014) compared the study of anthropometric measurement and body composition between elite handball and basketball players. The purpose of this study was to describe anthropometric characteristics and body composition of elite handball and basketball players as well as to make comparisons between them. Fifty-nine males were enrolled in the study, divided into three groups: fifteen handball players, fourteen basketball players and thirty healthy sedentary subjects. The descriptive statistics were expressed as a mean (SD) for each variable, while the ANOVA and LSD Post Hoc tests were carried out to detect the effects of each type of sport. The results showed there was no significant difference in body mass index among the groups, while a significant difference was found for body height and body weight as well as for all three of the body contents measured (muscle, bone and fat) among the groups. These findings may give coaches from the region better working knowledge and suggest to them to follow recent selection process methods and to be more careful during the recruitment.

Statement of the Problem

The broad Purpose of this study is to investigate the selected morphological, skill test and psychological Characteristics among High School state (14 to 16 years), Junior college state (17 to 18 years) and inter-University (above 19 years) players participating in Basketball, Handball and Volleyball male players.

Limitations

No special methods of controlling their living conditions, nutritional status, training schedules & social activities are imposed.

Delimitation:The study is delimited to the competitive male players of Basketball, Handball and Volleyball who have participated in the High school state(14 to 16 years), Junior college state (17 to 18 years) and inter-University level (19 to 28 years).

Significance of the Study:Enable to select players for coaching. Predication of successful performance *and* Enables coaches to identify deficiencies and to overcome through compensatory training.

Methodology

The aim of the present study is to identify the significant and limited number of morphological, psychological variables & sport skill test items in each group among High School state (14 to 16 years), Junior college state (17 to 18 years) and inter-University (above 19 years) players participating in Basketball, Handball and Volleyball male Players.

Subjects

Total of **270** subjects from High School state (14 to 16 years), Junior college state (17 to 18 years) and inter-University (above 19 years) players participating in Basketball, Handball and Volleyball male Players.

Number of subjects for Basketball, Handball & Volleyball groups

Level of participation	School State level	Junior college State level	Inter University level	Total
Age in years	14 to 16 years	17 to 18years	19 to 28 years	
Handball	30	30	30	90
Volleyball	30	30	30	90
Basketball	30	30	30	90
Total	90	90	90	270

The variables

In order to assess morphological, psychological characteristics & sports skill test items selected anthropometric measurements, psychological questionnaire and sports skill items were under taken.

Administration of Tests

Length	Morphological variables		
	Skinfold	Width	Girth
Body weight in Kgs.	Chest	Bi-epicondylar Humorous	Tensed Arm
Stature in Cms	Triceps	Bi-epicondylar Femur	Arm Relaxed
Sitting height	Biceps	Bi-acrominal width	Forearm
Leg length	Sub Scapular	Bi-iliocrystal width	Chest
Arm span	Supra Spinale		Waist
Hand Length	Abdomen		Thigh

Thigh
Calf

Medial Calf

In order to assess game performance the following sports skill test were administered.

Skill Test		
Handball	Basketball	Volleyball
Target Pass Test	Front Shot Test	Wall Valley Test
10mts dribble Test	Side Shot Test	Servicing Test
Shoot Test	Speed pass Test	Passing Test
Speed pass Test	Jump & Reach Test	Blocking Test
Zig Zag dribble Test	Over arm pass for Accuracy	Set up Test
Power Throw	Dribble Test	Spike Test

Factor analysis Inter university Basketball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Ten (10) components are to be identified that account for 83.814 per cent. Rest of the 26 components which account for the residual variance among Rotation Sums of Squared Loading 16.184 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The ten (10) components, which were selected, contributed arm length 22.505 per cent, calf girth 14.132 per cent, triceps skinfold 11.510 per cent, endomorphy 7.963 per cent, sitting height 6.544 per cent, arm tense girth 6.156 per cent, fat 4.446 per cent, height 4.102 per cent, chest girth 3.371per cent, femur width 3.084 per cent of variance respectively

Factors loading of variables in morphological characteristics of Inter University Basketball male players

Si No	Morphological Variables	
1	Arm Length	0.962
2	Calf Girth	0.901
3	Triceps Skinfold	0.880
4	Endomorphy	0.867
5	Sitting Height	0.837
6	Arm Tense Girth	0.834
7	Fat	0.830
8	Height	0.750
9	Chest Girth	0.553
10	Femur Width	0.517

Factor analysis Inter university Handball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Eight (8) components are to be identified that account for 82.999 per cent. Rest of the 28

components which account for the residual variance among Rotation Sums of Squared Loading 17.000 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Eight (8) components, which were selected, contributed endomorphy 29.611 per cent, waist girth 18.922 per cent, thigh girth 9.203 per cent, arm span 9.062 per cent, thigh skinfold 5.335 per cent, shoulder width 4.213 per cent, triceps skinfold 3.440 per cent, and muscle mass 3.213 per cent of variance respectively.

Factors loading of variables in morphological characteristics of Inter University Handball male players

Si No	Morphological Variables	
1	Waist Girth	0.926
2	Arm Span	0.899
3	Endomorphy	0.894
4	Thigh Skinfold	0.877
5	Thigh Girth	0.863
6	Shoulder Width	0.830
7	Triceps Skinfold	0.785
8	Muscle mass	0.531

Factor analysis Inter university Volleyball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Nine (9) components are to be identified that account for 84.803 per cent. Rest of the 26 components which account for the residual variance among Rotation Sums of Squared Loading 15.197 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Nine (9) components, which were selected, contributed arm length 22.715 per cent, weight 16.997 per cent, body density 12.257 per cent, , triceps skinfold 7.987 per cent, chest girth 7.027 per cent, humorous width 6.875 per cent, per centage of fat 4.141 per cent, hand length 3.876 per cent and muscle mass 2.928 per cent of variance respectively.

Factors loading of variables in morphological characteristics of Inter University Volleyball male players

Si NO	Morphological Variables	
1	Arm Length	0.963
2	Weight	0.908
3	Body Density	0.904
4	Triceps Skinfold	0.878
5	Chest Girth	0.867
6	Humorous Width	0.860
7	Fat	0.818
8	Hand Length	0.795
9	Muscle Mass	0.560

Factor analysis PUC State Level Basketball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Eleven (11) components are to be identified that account for 84.4843 per cent. Rest of the 25 components which account for the residual variance among Rotation Sums of Squared Loading 15.517 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Eleven (11) components, which were selected, contributed Arm span 17.186 per cent, Triceps skinfold 14.792 per cent, Arm tense girth 10.182 per cent, Hand length 7.913 per cent, weight 6.707 per cent, Thigh girth 6.116 per cent, Wrist girth 5.280 per cent, Forearm girth 4.813 per cent, Femur width 4.360 per cent, Ankle girth 4.073 per cent and abdomen skinfold 3.060 per cent of variance respectively.

Factors loading of variables in morphological characteristics of PUC State Level Basketball male players

Si No	Morphological Variables	
1	Arm span	.955
2	Triceps skinfold	.856
3	Arm tense girth	.869
4	Hand length	.902
5	weight	.892
6	Thigh girth	.825
7	Wrist girth	.874
8	Forearm girth	.830
9	Femur width	.808
10	Ankle girth	.851
11	abdomen skinfold	.830

Factor analysis PUC State Level Handball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Eleven (11) components are to be identified that account for 84.006 per cent. Rest of the 25 components which account for the residual variance among Rotation Sums of Squared Loading 15.996 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Eleven (11) components, which were selected &, contributed height 19.629 per cent, mesomorphy 11.547 per cent, weight 10.217 per cent, chest skinfold 7.477 per cent, per centage of fat 7.027 per cent, waist girth 6.074 per cent, hand length 5.138 per cent, sub scapula skinfold 5.018 per cent, muscle mass 4.537 per cent, mid calf skinfold 4.007 per cent and leg length 3.335 per cent of variance respectively.

Factors loading of variables in morphological characteristics of PUC State Level Handball male players

Si No	Morphological variables	
1	Height	0.973

2	Mesomorphy	0.938
3	Weight	0.937
4	Chest Skinfold	0.890
5	Per centage of Fat	0.870
6	Waist Girth	0.850
7	Hand Length	0.835
8	Sub Scapula Skinfold	0.765
9	Muscle Mass	0.710
10	Mid Calf Skinfold	0.669
11	Leg Length	0.662

Factor analysis PUC State Level Volleyball male players

Among the Thirty six Morphological variables careful examination of the table suggests that Ten (10) components are to be identified that account for 87.015 per cent. Rest of the 25 components which account for the residual variance among Rotation Sums of Squared Loading 12.984 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The ten (10) components, which were selected, contributed arm span 27.827 per cent, ankle girth 13.019 per cent, arm tense girth 12.154 per cent, mesomorphy 7.916 per cent, per centage of fat 6.583 per cent, ectomorphy 5.223 per cent, body density 4.145 per cent, height 3.924 per cent, and biceps skinfold 3.235 per cent and muscle mass 2.988 per cent of variance respectively.

Factors loading of variables in morphological characteristics of PUC State Level Volleyball male players

Si No	Morphological variables	
1	Arm Span	0.960
2	Ankle Girth	0.920
3	Arm Tense girth	0.955
4	Mesomorphy	0.875
5	Per centage Of Fat	0.894
6	Ectomorphy	0.942
7	Body Density	0.939
8	Height	0.805
9	Biceps Skinfold	0.747
10	Muscle Mass	0.786

Factor analysis High School State Level Basketball male players

Among the Thirty six Morphological variables careful examination of the table suggests that **Twelve** (12) components are to be identified that account for 89.1014 per cent. Rest of the 26 components which account for the residual variance among Rotation Sums of Squared Loading 10.899 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance

in the total variance, hence were ignored. The Twelve (12) components, which were selected, contributed waist girth 19.903, arm span 17.558, arm relax girth 9.289, leg length 6.799, weight 6.357, supra spinal skinfold 6.201, humorous width 5.499 , per centage of fat 4.258, body density 3.870, biceps skinfold 3.647 , shoulder width 2.927 and waist width 2.794 per cent of variance respectively.

Factors loading of variables in morphological characteristics of High School State Level Basketball male players

Si No	Morphological variables	
1	waist girth	.978
2	arm span	.971
3	arm relax girth	.741
4	leg length	.863
5	weight	.944
6	Supra spinal skinfold	.804
7	Shoulder Width	.802
8	Humorous width	.901
9	Per centage of fat	.895
10	Body density	.739
11	Biceps skinfold	.792
12	Waist width	.714

Factor analysis High School State Level Handball male players

Among the thirty six variables, careful examination of the table suggests that Eight (8) components are to be identified that account for 83.272 per cent of total variance in the data set of thirty six variables. Rest of the 28 components, which account for the residual variance among Rotation Sums of Squared Loadings 16.728 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Eight (8) components, which were selected, contributed waist girth 30.990 per cent, arm span 18.125% per cent, Mesomorphy 9.440 per cent, Thigh girth 8.682 per cent, thigh skinfold 5.214 per cent, shoulder width 4.078 per cent, triceps skin fold 3.499 per cent and muscle mass 3.243 per cent of variance respectively

Factors loading of variables in morphological characteristics of H.S. State Level Handball male players

Si No	Morphological variables	
1	Waist Girth	.923
2	Arm Span	.908
3	Mesomorphy	.883
4	Thigh Girth	.882
5	Thigh Skinfold	.848
6	Shoulder Width	.814
7	Triceps Skinfold	.788
8	Muscle Mass	.511

Factor analysis High School State Level Volleyball male players

Among the thirty six variables, careful examination of the table suggests that Nine (9) components are to be identified that account for 82.536 per cent of total variance in the data set of thirty six variables. Rest of the 28 components, which account for the residual variance 17.464 per cent were treated as insignificant because of their low Eigen values (< 1) and low variance in the total variance, hence were ignored. The Nine (9) components, which were selected, contributed 22.556 per cent, 15.647 per cent, 10.666 per cent 8.636 per cent, 6.144 per cent, 4.852 per cent, 3.519 per cent and 3.271 per cent of variance respectively.

Factors loading of variables in morphological characteristics of High School State Level Volleyball male players

Si No	Morphological variables	
1	Arm span	.965
2	Body density	.899
3	weight	.868
4	Humorous width	.843
5	Supra spinal skinfold	.839
6	Triceps skinfold	.829
7	Chest girth	.814
8	Hand length	.803
9	Waist width	.678

Conclusion:

With the limitations of the present study the following conclusion may be drawn:

1. The different factors loading of variables in Morphological characteristics of inter-university basketball male players, it was found that arm length (0.962) was maximum, while in femur width (0.517) was found to be minimum.
2. The different factors loading of variables in Morphological characteristics of inter-university Handball male players, it was found that Waist Girth (0.926) was maximum, while in Muscle mass (0.531) was found to be minimum.
3. The different factors loading of variables in Morphological characteristics of inter-university Volleyball male players, it was found that Arm Length (0.963) was maximum, while in Muscle mass (0.560) was found to be minimum.
4. The different factors loading of variables in Morphological characteristics of PUC State Level Basketball male players, it was found that Arm Span (0.955) was maximum, while in abdomen skinfold (0.830) was found to be minimum.
5. The different factors loading of variables in Morphological characteristics of PUC State Level Handball male players, it was found that Height (0.973) was maximum, while in Leg length (0.662) was found to be minimum.
6. The different factors loading of variables in Morphological characteristics of PUC State Level Volleyball male players, it was found that Arm Span (0.960) was maximum, while in Muscle mass (0.786) was found to be minimum.
7. The different factors loading of variables in Morphological characteristics of High School State Level Basketball male players, it was found that waist girth (.978) was maximum, while in Waist width (0.714) was found to be minimum.
8. The different factors loading of variables in Morphological characteristics of High School State Level Handball male players, it was found that Waist Girth(0.923) was maximum, while in Muscle Mass(0.511) was found to be minimum.
9. The different factors loading of variables in Morphological characteristics of High School State Level Volleyball male players, it was found that Arm span(0.965) was maximum, while in Waist width(0.678) was found to be minimum.

10. In morphological, psychological and game performance of Inter university basketball male players Fat (0.714^{++}) is significantly positively correlated with the game performance at 0.01 level, body density (-0.387^{+}) is significantly negatively correlated with the game performance at 0.05 level, in Inter-university Volleyball Sitting height (-0.385^{+}) is significantly negatively correlated with the game performance at 0.01 level.
11. In PUC state level Handball male players thigh Girth ($.389^{+}$), is significantly correlated with the game performance at 0.05 level, In PUC state Handball male players Sub scapula skinfold (0.367^{+}) is significantly correlated with the game performance at 0.05 level, femur width (0.562^{++}) is significantly correlated with the game performance at 0.01 level.
12. In High School state Basketball male players Mid Calf Skinfold (0.387^{+}) is significantly correlated with the game performance at 0.05 level and In High School state Handball male players Thigh Girth (0.389^{+}), is significantly correlated with the game performance at 0.05 level.

From this study it was concluded that there was a significant relationship of Morphological and psychological variables with game performance of Inter university, PUC state level and High school State level basketball, handball and volleyball male Players. The results concluded the said variables were influenced to improve the skill and game performance of basketball, handball and volleyball male Players.

Recommendations:

With the help of the results derived from this study, the following recommendations can be given,,

The result of this study will create greater interest of Physical Education Teachers, Directors, Coaches, Trainers and players, as they would be able to evaluate the Morphological and Psychological variables for efficient game performance. The information derived from this study will not only serve coaches in their selection of sports Pearson, but provide guidelines for training programs for sports Pearson. The findings of this study will give value in designing the fitness programme for those who need such attention. The result of this study also helps to evaluate the comparative standards and norms for different games and sports Pearson. It may be recommended to carry out the similar studies with elite, professional players. It may be recommended to carry out the similar studies with different games for different age group and gender group. It is recommended that a longitudinal study may be conducted to see if high scores on skill performance variables act as limiting factors in different games. It is recommended that special efforts should be made to develop the Basketball, Handball and Volleyball especially in school and college to train the young sportsman. The results of the present study are expected to enhance the knowledge of physical education teachers, so as to enable them to give regular and adequate practices to genuine sports Pearson and enhance their playing abilities.

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Students with Disabilities Perceived Challenges and Opportunities in Physical Education Practical Classes: with Specific Reference to Arsi Zone Secondary Schools.

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Abstract

The purpose of this study is to assess challenges and opportunities students with disability perceived during physical education practical classes in Arsi Zone Secondary Schools. A descriptive survey design was used with mixed approaches. The data was analyzed using descriptive statics frequency, crosstab and percentage with chi-square test at p-value < 0.05 level. The findings of the study revealed that the majority of students with disability are not taking part because of lack of appropriate sport equipments, facilities and knowledge how to exercise. **Statement of the problem:** Only a few studies conducted on inclusion for learners with disabilities in physical education practical classes. This gap triggered the need to carry out this study. **Methodology:** The method employed in this research was both quantitative and qualitative methods with descriptive survey design. The total population of this study is 5012. The researcher used 3% of the total population by using rule of thumb. Regarding the sampling techniques non-probability convenient (availability) and purposive sampling; and probability random sampling were involved. Since it is a survey study, the researcher used both open and close ended self administered questionnaires, structured interviews; document analysis and observation for data collection, for those visual impaired students the researcher administered questionnaires were used.

Students with disability: In Eteya high School there are 19(90.5%) and 2(%) participants of physical handicapped and visual impairment respectively. Whereas in Boru high school all 4(100%) of participants are physically handicapped. in Huruta high school 10 (83.3%) and 2 (16.7%) of the total participants are physically handicapped and visual impaired respectively. whereas in Dhera high school, 8 (88.9%) and 1 (11.1%) of the total participants are physically handicapped and visual impaired respectively. From this we can inferred that in Eteya, Huruta and Dhera high schools, most students have physical problem and few are with visual problems. In contrast in Boru high school all of the respondents have physical problem.

Sport facilities and equipments from SWD participants (N=46): Significance at df=1, p-value < 0.05 and chi-square value > 3.84(for item 1 and 2), for item 5 df = 2, p-value <0.05 and chi-square value > 5.99.

The majority thirty eight (82.6%) of the participants indicated that the sport fields and play grounds are easily accessible for them in their school but few of the total participants eight (17.4%) indicates that the sport fields and play grounds are not easily accessible. The difference is significance because chi-square value 9.38 is greater than 3.84(significance value at df=1 and p-value <0.05) and p-value is 0.004 which is less than 0.05. Similarly from the total participants (46) the majorities thirty one (67.4percent) responds that there are no adequate sport facilities and equipments but few of the respondents fifteen (32.6 percent) responded as there are adequate sport facilities and equipments. This is significance at chi-square value 15.93 and p-value 0.000 (significance value at df 1 is chi-square greater than 3.84 and p-value<0.05). Item 3, the majorities forty four (95.7 percent) of the respondents responded as the sport facilities and equipments are not comfortable for someone in a wheel chair& with mobility aid while two (4.3 percent) of the participants respond as the sport facilities

and equipments are comfortable for someone in a wheel chair & with mobility aid. The difference is significance with chi-square value 6.577 and p-value 0.01. item 4 all of the respondents (100%) responds as the equipments cannot be adjusted to accommodate the needs of students with disabilities. similarly in item 5 from the 46 respondents, five (10.9 percent) responds as good, fourteen (30.4 percent) responds as Fair and the majorities twenty seven (58.7 percent) of the total participants responds as the condition of school compounds and facilities are poor. The difference is significance because the chi-square value is 9.921 which is greater than 5.99 significance value at $df = 2$ and $p\text{-value} < 0.05$).

Awareness of SWD to the benefits of physical activities (N=46): Significance at $df=1$, $p\text{-value} < 0.05$ and chi-square value > 3.84 (for item 1 and 2), for Item 3 and 4 $df = 2$, $p\text{-value} < 0.05$ and chi-square value > 5.99 . the majority twenty nine (63.0 percent) of the participants indicated that they have no information about the type of exercises that students with disability can participate but seventeen (37.0 percent) of the total participants responded as they have enough information about the type of exercise that students with disability can participate, with significance difference of chi-square value (4.187) is greater than 3.84 (standard value at $df=1$ and $p < 0.05$) and the p-value is 0.29 less than 0.05 at degree of freedom one. item 2, from the total participants (46), the majorities thirty two (69.6 percent) responds that, they think that knowing the health risk of being inactive will make them actually change their levels of interest to participate but few of the respondents fourteen (30.4 percent) of the total responded as they do not think that knowing the health risk of being inactive will make them actually change their levels of interest to participate in physical activities. The difference is significance at chi-square value 10.25 which is greater than 3.84 (significance value at $df=1$ and $p < 0.05$) and p-value is 0.0031 which is less than 0.05. Item 3, four (8.7 %), eighteen (39.1%) and twenty four (52.2 %) of the total participants very important, somewhat important and not important for the question asked the importance of school physical activity for their own physical activities respectively. This is significance at chi-square value 6.459 which is greater than 5.99 (standard value at $df=2$ and $p < 0.05$), $df=2$ and $p\text{-value} = 0.040$.

Item 4, twenty (43.5 percent), twenty five (54.3 percent) and one (2.2 percent) of the total participants responds active, passive and very passive respectively for the question asked their life style in terms of physical activities. this is significance at chi-square value 6.483 which is greater than 5.99 (standard value at $df=2$ and $p < 0.05$), $df=2$ and $p\text{-value} = 0.039$. here we can inferred that majority of the participants their life style as passive in terms of physical activity at significance value $p\text{-value} < 0.05$.

Significance at $df = 2$, $p\text{-value} < 0.05$ and chi-square value > 5.99 . So all items are significance except item seven.

There are 9 purposes assumed to be the purposes of participating in physical activities. Among these purposes, the researcher selects five of them to discuss. The points are selected because most participants agree to the statements. As can be seen in the above responses the majority of the participants said that doing regular physical activities improves muscle strength rated by 73.9% of them. 69.6% of the respondents also indicated that regular physical activities help students with disabilities to lose weight. 67.4% of the respondents responds agreed that doing physical activities is good for their health. 52.2% and 50% of the respondents also agreed that physical activity is important to enjoy them self and reduce the risk of high blood pressure respectively.

Attitude of SWD towards physical activities (N=46): Significance value for item 1, $df = 2$ chi-square value > 5.99 , and $p\text{-value} < 0.05$. For item 2, 3, 4, 5, 6 and 7 $df = 1$, chi-square value > 3.84 and $p\text{-value} < 0.05$.

Five (10.9%), twelve (26.1%), three (6.5%), and twenty four (52.2%) of the total participants rated their attitude towards participating in activities as very good, good, fair and poor respectively. This is significant with chi-square value 11.649 and p-value 0.02 (significance value at $df=2$ is chi-square greater than 5.99 and $p\text{-value} < 0.05$). Item 2, the majority twenty six (56.5 percent) of the participants indicated that they do not participate in physical education practical class while the remaining twenty (43.5 percent) of the total participants responded as they participate in physical education practical classes, the difference is significance at $p\text{-value} < 0.05$. item 3, the majorities twenty four (92.3 percent) responds that, still they are not decide to participate in physical education practical classes while the remaining two (7.7%) of the respondents responds as not willing to begin

participation. The difference is significance at p -value < 0.05 . item 4, twenty six (56.5 percent) of the participants responds as they think that it is difficult to participate in physical activities for students with disabilities. The remaining twenty (43.5 percent) of the respondents responds as they think that it is not difficult to participate in physical activities.

Item 5 twenty four (52.percent), of the total participants in responded as they believe that students with disabilities can participate in physical activities whereas twenty two (47.8%) of the total participants responded as they believe that students with disabilities cannot participate in physical education practical classes. still there is no significance difference at p -value < 0.05 . Item 6 twenty (43.5%) of the participants responded as they worried about how their body looks when exercising around other students whereas twenty six (56.5%) of the participants from responded as they are not worried about how their body looks when exercising around other students with significance difference of chi-square 11.12 and p -value 0.001. Lastly, in item 7 twenty two (47.8%) of the participants responded as the support of other non disable students for them in a practical class have a significant impact on participation whereas twenty four (52.2%) of the participants responded as the support of other non disable students for them in a practical class have no a significant impact on participation. the difference is not significance at p -value < 0.05 .

Teachers basic knowledge's of adapted PE (N=46) Significance value for item 1, $df = 2$ chi-square value > 5.99 , and p -value < 0.05 . For item 2, 3 and 4, $df = 1$, chi-square value > 3.84 and p -value < 0.05 .

As we can see from item 1, from the total of 46 participants, nineteen (14.3%) responded as they evaluate by written exam and twenty (43.5%) responded as they evaluate by using both written and practical exam but the remaining seven (15.2%) responded as they are not evaluated. The difference is significance because chi-square value 11.57 is greater than 5.99 (significance value at $df = 2$ and p -value < 0.05) and p -value is 0.003. item 2 the majorities of the respondents thirty three (71.7%) of the participants responded as the assessment method of the teachers are comfortable for them. The remaining thirteen (28.3%) of the respondents responded as the physical education teacher assessment method is not comfortable for them. Even though the difference is not significance at p -value < 0.05 . Similarly, in item 3, the majorities twenty four (52.2%) of the participants responded as their teachers teaching method is not comfortable for them while the remaining twenty two (47.8%) of the participants responded as their teachers teaching method is comfortable to participate in physical education practical classes. But the difference is not significance at p -value < 0.05 .

Lastly in item 4, the majorities, twenty six (56.5%) of the respondents responded as their teacher does not include them during physical education practical classes. whereas, twenty (43.5%) of the participants responded as their teachers include them during physical education practical classes. Still the difference is not significance at p -value < 0.05 .

Opportunities to implement Inclusive PE (N=46): Significance value for item 1, 2, and 4, $df = 1$, chi-square value > 3.84 and p -value 0.05. For item 3, $df = 2$ chi-square value > 5.99 , and p -value < 0.05 . The majorities twenty four (52.2percent) of the participants indicated that there are no opportunities for students with disabilities to have access to PE practical classes while twenty two (47.8%) of the respondents indicated that there are no opportunities. even though the difference is not significance at p -value < 0.05 . Similarly on item 2, from the total participants thirty five (76.1 percent) responds that, if they have an opportunity to participate, they will initiate to participate but few of the respondents eleven (23.9percent) of the participants responds as even if the opportunities are available, they do not initiate to participate. Still there is no significance difference between observed and expected values at p -value < 0.05 . Concerning to item three from the 46 respondents, nine (19.6%), nine (19.6%), four (8.7%) and twenty four (52.2%) of participants indicated that the availability of opportunity in their school rates as good, fair, poor and no opportunity at all respectively. even though there is no significance difference between the observed and expected values at p -value < 0.05 . On item four, only two (4.3%) of the total participants responds as their school provide enough promotion to encourage students with disabilities to participate in activities which is insignificant value but the remaining forty four (90.5%) respondents responds as there is no enough promotion in their school. Even though there is no significance difference between the observed and expected value at p -value < 0.05

Interview report from PE teachers; General Information: The four selected physical education teachers from the four high schools were asked about the major field of study that they were graduated; all are told that their major field of study is physical education. the second question was do

you have students with special needs, all of the respondents said that there are students with special needs in their schools, of those the teacher from Eteya high school said that there are 21 students with disabilities among those 19s have physical disability while the remaining 2 have visual impairment. In Boru high school, as the teacher said there are 4 students with physical disabilities. In Huruta, the teacher told as there are 13 students with disability of those 12s are physically disabled and only one student has visual impairment. Finally, the teacher from Dhera high school said that there are 9 students with disabilities from those eights are physically disabled and the remaining one has visual impairment.

Adapted Physical education: The interview result shows that all the four physical education teachers said that they have never taken on adapted physical education and also they said that they have not taken any training about adapted physical education and students with special needs. They why is that? They said at the time of their university course, there was no adapted physical education curriculum. The teachers said that this let them to give poor attention for students with disabilities and also they said the participation of students with disabilities during physical education practical class is based on their interest.

Teaching strategy used to address the needs of students with Disabilities: Teachers used group work, pair-work, participatory to make students active participant and involve in different activities. During the observation session the researcher has also observed that teachers tried to use different methods to involve all students in each activity and to make them active participants. They were also asked whether they give additional time for students with disabilities to do their activities, they replied that they didn't give any additional time for them in the regular class because of time limitation but students have ample time in the resource room to do different activities. Another attempt was made to know how to assess and evaluate students with disabilities; they replied the majority students evaluated by using both practical and written exams, but few students with sever disability evaluated by written exam only.

Availability of adequate sport facilities and equipment: it is not adequate to provide the service needed for these students. play grounds are not accessible specially for those with severe disabilities Therefore students on a wheel chair and on other mobility aids cannot get the sport field easily.

Conduciveness of the physical environment: the compound is not suitable enough for students who uses wheelchair and students with visual impairment and this may have significant impact in the teaching learning process. Other teacher of Eteya also claimed that the narrowness of the compound might affect the mobility of the students because it is crowded by students during the break time and as a result they prefer to stay on the floor in the break time and difficult to move to the field. The final question was if they have any recommendation, they recommended that the roads to the school and to the field should be adjusted and modified for a student moving in a mobility aid. the equipment should be bought which are necessary to provide inclusive physical education the service needed for students with special needs and teachers should get in service training to update their knowledge and how to use alternative teaching procedures in order to address the students needs and teach in accordance with their potential. The adapted curriculum should be included in high school physical education, as they said it helps to increase the awareness and interest of students with disabilities towards physical activities.

Interview report from school principals: opportunity they have to implement inclusive education: there are many challenges that hinder the implementation of inclusive physical education such as the attitude of teachers and parents towards students with disability and teachers of students with special needs, lack of attention from the education office both zones and woreda, lack of educational materials, large class size, students lack interest to participate in physical activities etc.

Availability of adequate sport facilities and equipment: There is no special equipment even for visually impaired students there is no reference books written in Braille, and other necessary special educational materials and equipment in the library. Regarding the conduciveness of the physical environment, the principles reported that the compound is not suitable enough for students who uses wheelchair and students with visual impairment and it can hinder the teaching learning process to some extent. Therefore they said that the school has a plan to adjust the physical environment of the compound in order to make it suitable for students with different disability fence. Finally they were asked about the interaction between teachers and students with special needs in classrooms and outside the classroom.

Challenges of SWD to participate in PE practical classes: The findings from the questionnaires of students with disabilities revealed that 30 (65.2%) responded as no adequate sport facilities and equipments, 44 (95.7%) responded the equipments and sport facilities are not comfortable for someone in a wheel chair and with mobility aid. 100 % of the respondents responded that the equipments can never be adjusted to accommodate the need of students with disabilities. Generally, 58.7% of the respondents rate the condition of school compound and facilities in their schools. In addition to the questionnaires of students without disabilities and the interviews from physical education reported that the participation of students with disability are affected by the following major factors: inadequacy of sport facilities and equipments, the condition of the school compounds, lack of interest and attitudes, lack of awareness, lack of opportunities indicated by the majority of them.

Physical Activity Participation and Perception: Among participants of students with disabilities in this study, most 26 (56.5%) from both group of visually and physically impaired respondents, are not participated in physical activities during practical classes. This may indicate that people with disabilities experience barriers to participation in physical activity. There is a need for people with disabilities, to be encouraged and supported in becoming physically active. Emphasis should be placed on increased opportunities made available to students with disabilities to take part in activities of their choice, so they can experience new sports and activities that they may enjoy.

Most 26 (56.5%) of the respondents of physically disabled responded as their teacher discourages while 20 (43.5%) responds as their teacher encourages and have gotten support from other non disabled students. The evidence shows that teachers and students without disability are highly influential and are capable of both encouraging and discouraging in participation. A motivator for participation in sport was the presence of a supporting encouraging and inspiring family alongside their practical support. The majority of respondents are appreciating the health benefits and agreeing that it is enjoyable to be physically active, it shows that those respondents have positive attitudes towards physical activity. This suggests that efforts to increase participation are best focused on making it easier for students such as advising on how exercise can be fitted in to their daily practice rather than telling them the benefits.

Opportunity to participate in physical education: Among the students with disabilities, only 22 (47.8%) responds as there is opportunities in their schools. these opportunities includes the sport fields and play grounds are easily accessible, school water and toilet services, other students support and so on. as they said still this opportunities are not adequate. 76.6% of the total students with disabilities respond that if they have gotten more opportunities in their schools, they will be more initiated & interested to participate in physical education practical classes. 95.7% of them responded as their schools did not provide enough promotion to encourage students with disabilities to participate in school physical activities. students without disabilities, schools principals and physical education teachers needs to cooperate at every levels in order to provide organized and appropriate physical activity and sport opportunities for all. Partnership working is the most important approach in providing opportunities for students with disability, to integrate with one another, to compliment provision and to access different activities. As it was indicate in the research, 43.5% of students with disability said that they have integrated with other students during physical education practical classes. This integration of the students can help students with disabilities get support and increasing opportunities and raising the number of students with disabilities participating in sport and physical activities. Contrary to this, 45.7% of the students are not participated at all and 10.9% participate in physical education practical classes separately and made no promotion. This can minimize an opportunity for students with disabilities to become involved in physical activities.

Summary and Conclusions: As the results of the study revealed, the majority of students were not taking part in physical activity. However, most of the participants want to start participating in physical activity if they would have opportunities or conditions are set. They have a good knowledge only about the purposes of physical activities but have poor perception and attitude towards the participation in physical activities. Therefore, what is more important is not telling them about the importance of physical activities rather providing them with more opportunities according to their needs and abilities and telling & showing about the type of activities that students with disabilities can participate in.

According to the results of the study, students with disabilities do not access to physical activity opportunities in the same manner as that of students without a disability. Students with disabilities do not have the opportunity to participate in a disability specific sport activities in Eteya, Boru, Huruta and Dhera high schools. In these high schools, there are no adequate sport facilities and equipments, specially the equipments are not comfortable for students with disabilities. In the same manner, the school compounds and sport fields are not comfortable for students in a wheel chair and a mobility aid.

The findings indicate that offering individual support to learners with disabilities motivates the students to participate in physical activities. The combined efforts between the teachers and learners without physical disabilities in supporting learners with physical disabilities have a great roll. The interview findings in this study seem to show that training in special needs education is an important factor in implementing inclusive physical education for learners with physical disabilities. The three teachers had training in special needs education and this may have influenced the way in which they involved learners with physical disabilities in physical education lessons. Furthermore, the findings indicated that though the teachers had some understanding about inclusive education, they still expressed lack of skills necessary to attend to learners with varying physical disabilities within inclusive physical education lessons. Based on the finding, teachers may need to constantly keep themselves abreast with emerging teaching techniques essential in meeting individual learners' needs.

Generally, students with a disability have interest in becoming more active but are limited. The result of this study shows that participation rates for person with disability are significantly lower. Therefore, the study concludes that in order to meet the needs of students with disabilities the problems need to be alleviated though cooperation among governmental and nongovernmental bodies as well school officers, zone school and regional school bureau should give attention.

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Effect of Weight Training for development of speed among sprinters of Osmania University

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Introduction:

Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the weight force of gravity (in the form of weighted bars, dumbbells or weight stacks) to oppose the force generated by muscle through concentric or eccentric. Weight training uses a variety of specialized equipment to target specific muscle groups and types of movement. Weight training is a type of strength training that uses weights rather than elastic, Eccentric Training or muscular resistance to increase strength. Endurance training is associated with aerobic exercise while flexibility training is associated with stretching exercise like yoga or pilates. *Weight training* is often used as a synonym for strength training, but is actually a specific type within the more inclusive category. Contrary to popular belief, weight training can be beneficial for both men and women. Effective weight training develops lean muscle, increasing your resting metabolic rate and helping your body burn fat.

Sprinting is the act of running over a short distance at (or near) top speed. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, or avoiding or catching an opponent. In athletics and track and field, sprints (or dashes) are races over short distances. They are among the oldest running competitions. The first 13 editions of the Ancient Olympic Games featured only one event—the stadion race, which was a race from one end of the stadium to the other.

There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: the 100 metres, 200 metres, and 400 metres.

These events have their roots in races of imperial measurements which were later altered to metric: the 100 m evolved from the 100 yard dash, the 200 m distances came from the furlong (or 1/8 of a mile), and the 400 m was the successor to the dash or quarter-mile race

Top Sprint Performers in 100 M in Mens Section.

Usain Bolt (World Record: 9.58) at the '09 World Championships)

Usain Bolt (Jamaica) – Fastest Time: 9.58 seconds. ...

Tyson Gay (United States) – Fastest Time: 9.69 seconds.

Asafa Powell (Jamaica) – Fastest Time: 9.72 seconds. ...

Methods and Materials:

The sample for the present study consists of 20 Male sprinters out of which 10 are experimental group and 10 are controlled group of Osmania University. Weight training exercises are given three times a week for eight weeks for experimental group and controlled group were given general training of Sprints.

The following are the weight training exercises were given four times a week for six weeks to the experimental group shot putters.

Biceps Curls	9. Good Morning.
Triceps Curls	10. Side Wards Bend
Bench Press	11. Heel Raising with Weights
Back Press	12. Leg Press
Bent Over Rowing	13. Push Ups
Up right Rowing	14. Sit Ups
Wrist Curls	15. Hack Squat
Half Squats	16. Dumbell Exercises

The above exercises used as per the requirement in the three sessions in a week. The controlled group were given general training of sprints. To assess speed the 50 M Run were conducted in Pre Test and Post Test to both the groups to determine the speed.

50 M Run:

- o Purpose: The aim of this test is to determine acceleration and speed.
- o equipment required: measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 70 meters.
- o procedure: The test involves running a single maximum sprint over 50 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary standing position (hands cannot touch the ground), with one foot in front of the other. The front foot must be behind the starting line. Once the subject is ready and motionless, the starter gives the instructions "set" then "go.". The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and the participant should be encouraged to not slow down before crossing the finish line.

Results:

This study shows that due to the weight training exercises there is a improvement of Sprinters experimental group in speed and Sprinters controlled group is decreased in performance ability and speed due to the general training.

Mean values and Independent Samples Test of 50 M run test between experimental and control groups

Variables	Group	Pre Test Mean \pm SD	Post Test Mean \pm SD	t	P - Value
50 M Run Test	Experimental	7.51 \pm 0.294	7.23 \pm 0.262	4.58	0.000
	Control	7.64 \pm 0.376	7.73 \pm 0.408		

*Significant at 0.05 level

The Experimental Group of 50 M Run Men is 7.51 in Pre Test and Controlled Group mean is 7.64 in Pre Test there is difference of 1.13 in Pre Test. The Experimental Group Mean is 7.23 in Post Test and Controlled Group mean is 7.73, the Experimental Group mean in Post Test in 50 M Run is decreased from 7.51 to 7.23 there is a improvement of 0.28 from Pre Test to Post and Control Group Mean is post test is 7.73 there is a increasement of 7.64 to 7.73 from Pre Test to Post, the performance is come down to 0.09 in the controlled group. The Standard deviation of Experimental group in Pre Test 0.294 and Post Test is 0.262 and controlled group is 0.376 to 0.408. T value is 4.58 and p-value is 0.000.

Discussion & Conclusion:

Speed training involves the increase in muscle power through both speed in starting and stopping function. Each exercise becomes easier with an explosive force behind each repetition, making speed training ideal for power lifters and athletes who run and perform agile movements. The form of exercise increases agility and speed in movement and exercise technique. The power and fast twitch muscle ability increase over time as well. Several exercises in speed training involve the addition of weighted resistance or speed enhancers to force fast twitch muscles into overdrive, past the normal point of exertion that normal exercises cause. Weight Training is important for sprinters to develop the Speed. Hence it is recommended to Include the Weight Training Programmed for Sprinters.

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Effect of Strength Training for Development of Shoulder Strength among Rowers of Osmania University, Hyderabad

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Introduction:

Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the weight force of gravity (in the form of weighted bars, dumbbells or weight stacks) to oppose the force generated by muscle through concentric or eccentric contraction. Weight training uses a variety of specialized equipment to target specific muscle groups and types of movement. Sports where strength training is central are bodybuilding, weightlifting, power lifting, and strongman, Highland games, shot-put, discus throw, and javelin throw. Many other sports use strength training as part of their training regimen, notably; mixed martial arts, American football, wrestling, rugby football, track and field, rowing, lacrosse, basketball, baseball and hockey. Strength training for other sports and physical activities is becoming increasingly popular.

Rowing, often referred to as **crew** in the United States, is a sport with origins back to Ancient Egyptian times. It is based on propelling a boat on water using oars. By pushing against the water with an oar, a force is generated to move the boat. The sport can be either recreational, where the focus is on learning the technique of rowing, or competitive, where athletes race against each other in boats. There are a number of different boat classes in which athletes compete, ranging from an individual shell (called a single scull) to an eight-person shell with coxswain (called a coxed eight)

Osmania University Rowers in Action



Methods and Materials:

The sample for the present study consists of 20 Male Rowers of Osmania University out of which 10 are experimental group and 10 are controlled group between the age group of 18-21 Years. Weight training exercises are given Three times a week for six weeks for experimental group of Rowers and controlled group were given general training of rowing

To assess the Shoulder Strength the Pre Test and Post Test the following test were conducted

1. Pull Ups.

Results and Discussion:

The results of the study shows that Rowers of Experimental group has increased in Shoulder Strength due to Strength Training Exercises compare to Rowers Control group which does the general training of Rowing

Table I: Mean values and Paired Samples Statistics of Pull Ups between experimental and control groups of Rowers of Osmania University

Variables	Group	Pre Test Mean ± SD	Post Test Mean ± SD	t	Sig.(2tailed)
Pull Ups Test	Experimental	8.33±.479	12.73±.868	-31.293	.000
	Control	8.27±.450	7.80±.714	-4.474	

*Significant at 0.05 level

The Mean Performance of Experimental Group in Pull Ups in Pre Test is 8.33 there is improvement in performance to 12.73 in Post Test. That Means Experimental group has improved 4.40 due to the strength Training Exercises in the mean from Pre Test to Post Test. The Mean Performance of Control Group in Pull Ups in Pre Test is 8.27 there is decrease in performance to 7.80 in Post Test. That Means Experimental group has decreased to 0.47 due to the strength Training in the mean from Pre Test to Post Test

Conclusions:

It is concluded that due to the strength training that Shoulder Strength has increased among the rowers. Rowing is the all body exercises which includes gluteus, core, shoulder, arms etc. Strength Training is compulsory in Rowing Event.

Recommendations:

It is recommended that similar studies can be conducted on other events in athletics and also female Rowers. This type of study is useful to coaches to give proper coaching for development of motor qualities for improvement of performance in Water sports.

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A Comparative Study on Endurance Ability among Basket Ball and Net Ball Players of Osmania University,Hyderabad

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Introduction

Basketball is a sport, generally played by two teams of five players on a rectangular court. The objective is to shoot a ball through a hoop 18 inches (46 cm) in diameter and mounted at a height of 10 feet (3.048 m) to backboards at each end of the court. The game was invented by Dr. James Naismith, who would be the first basketball coach of the Kansas Jayhawks, one of the most successful programs in the game's history. A team can score a field goal by shooting the ball through the basket being defended by the opposition team during regular play. A field goal scores three points for the shooting team if the player shoots from behind the three-point line, and two points if shot from in front of the line. A team can also score via free throws, which are worth one point, after the other team is assessed with certain fouls. The team with the most points at the end of the game wins, but additional time (overtime) is issued when the score is tied at the end of regulation. The ball can be advanced on the court by throwing it to a teammate, or by bouncing it while walking or running (dribbling). It is a violation to lift, or drag, one's pivot foot without dribbling the ball, to carry it, or to hold the ball with both hands then resume dribbling.

Netball is one of many sports that developed its unique form and structure from another, transplanted sport—in this case, from the United States to Great Britain—and then, as a result of that move, evolving into a significantly different sport. Netball was introduced to England in 1895 as the indoor game of basketball, which it greatly resembles, although a staccato game and a sport of stop, start, catch, and shoot compared to the all-action fluidity of basketball. Netball is an international sport, played by two teams of seven players and based on throwing and catching. Traditionally it is played by women but mixed and men's netball is becoming increasingly popular. The game consists of four quarters of 15 minutes each, with an interval of 3 minutes between the first/second and third/fourth quarters and an interval of 5 minutes at half time. Teams change end each quarter.

Method:

To find out the Aerobic Endurance between Male Net Ball and Male Basket Ball Players. The sample for present study consists of 30 Male Net Ball Players and 30 Male Basket Ball Players of Osmania University who has taken part in the O.U. Inter College sports and games during the year 2015-2016. The 12 Minute Cooper Test is used for collection of Data. The Cooper test is a test of physical fitness. It was designed by Kenneth H. Cooper in 1968 for US military used in the original form; the point of the test is to run as far as possible within 12 minutes.

Results and Discussion:

The Table No.1 showing the Mean, S.D, Standard Error, t-ratio of Net Ball Players and Basket Ball Players in Cooper Test.

Table No.1

Results of 12 min Cooper Test	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
BASKET BALL Players	30	2950.00	219.71	49.13	1.69453	58.00	0.10
NET BALL Players	30	2850.00	137.71	30.79			

The Basket Ball Players Mean Performance is 2950 Meters and the Net Ball Players Mean performance is 2850 Meters. There is mean difference of 100 Meters between Net Ball and Basket Ball Players. The Performance of Basket ball Players is very good comparing to Net Ball Players. Hence it is concluded that Basket Ball Players are good in aerobic endurance than Net Ball Players.

Conclusion

Hence it is concluded that Basket Ball Players are good in aerobic endurance than Net Ball Players.

Reccomendations:

Similiar studies can be conducted on female players and other team game players and individual game players.

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Assessment of Locus of Control in Talented Female Hockey Players

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Abstract

The aim of the present study is to comparatively assess locus of control in talented female hockey players. For present study, 40 national level female hockey players (Ave. age 24.12 yrs.), 40 state level female hockey players (Ave. age 23.34 yrs.), 40 district level female hockey players (Ave. age 21.02 yrs.) were selected as sample. Purposive sampling was used in the present study for selection of sample. Rotter's Locus of Control Scale (1966) was used to collect psychological data in the present study. One way ANOVA and Post-hoc test indicate a significant difference in locus of control of national, state and district level female hockey players. National level female hockey players showed superior internals as compared to state and district level female hockey players. It was concluded that despite the fact that field hockey performance is affected by so many variables, national female hockey players believe that their performance is solely dependent upon their efforts and not the external factors as compared to state and district level female hockey players.

Keywords: Field Hockey, Female Players, Locus of Control, Sports Achievement etc

Introduction

A person's belief in his/her abilities to control over certain events in life is termed as locus of control. Internal locus of control means controlling and influencing the outcome of an event while external locus of control means blaming own failures on some external factors. The concept of locus of control was coined by Rotter (1954). Locus of control was formulated within the framework of Rotter's (1954) social learning theory of personality. A person's "locus" (Latin for "place" or "location") is conceptualized as either internal (the person believes they can control their life) or external (meaning they believe their decisions and life are controlled by environmental factors which they cannot influence, or by chance or fate).

The theory of locus of control may also be useful in sports because of its nature. The magnitude of locus of control can bifurcate athletes into two zones i.e. those who believe that success/failure depends on their own abilities and those athletes who blame outcome on external factors like environmental conditions, crowd disturbance etc.

One such sport where theory of locus of control may prove useful is field hockey. The outcome of a hockey match is dependent upon so many external factors like environmental conditions, teammate's performance on that particular day apart of a player's own abilities. In this context it would be worthwhile to analyse locus of control in talented female hockey players of India so that behaviour pattern of female hockey players may be judged. It is even more important because so far researchers like Sarah M. Lambert et al. (1999), Sousa et al. (2008), Chugh et al. (2012), Singh (2015), Dhormare (2016) studied locus of control under sports psychology but surprisingly no study has been conducted as yet in which locus of control in talented female hockey players has been assessed. Hence the researcher decided to compare locus of control between national, state and district level female hockey players.

Hypothesis

National female hockey players will possess significantly stronger internal locus of control as compared to state and district level female hockey players.

Methodology:- The following methodological steps were taken in order to conduct the present study.

Sample:-

For present study, 40 national level female hockey players (Ave. age 24.12 yrs.), 40 state level female hockey players (Ave. age 23.34 yrs.), 40 district level female hockey players (Ave. age 21.02 yrs.) were selected as sample. Purposive sampling was used in the present study for selection of sample.

Tools:

Rotter's I-E Locus of Control Scale:

Rotter's Locus of Control Scale (1966) was used to assess locus of control. It consists of 29 items with two choices i.e. A and B.If the score is high, the subject's locus of control is termed as external and if the score is low, the locus of control is termed as internal.This scale is highly reliable and valid.

Procedure:

40 national, 40 state and 40 district level female hockey players were identified and selected. Prior written consent was obtained for participation in research.RottersLocus of Control Scale (1966)was administered to all selectedsubjects as per their convenience and availability.After scoring of the responses according to author's manual, the datawas tabulated according to their respective groups.To compare locus of control between national, state and district level female hockey players, One Way Anova was applied. Result depicted in table 1 and 2 respectively.

Analysis Of Data

Table 1: One Way ANOVA Descriptive Statistics

Locus of Control in National, State and District Level Female Hockey Players (N=120)

Groups	N	Locus of Control	
		Mean	S.D.
National Level Female Hockey Players	40	8.12	3.19
State Level Female Hockey Players	40	9.42	2.89
District Level Female Hockey Players	40	10.17	2.40
		F=5.30, p<.01	

F = 5.30 shown in table 1 shows significant difference in locus of control between national, state and district level female hockey players. In order to analysis these differences minutely, least significant difference test was used. Results depicted in table 2.

Table 2:Comparison of Mean Scores on Locus of Control in Female Hockey Players Represented National, State and District Level (N=120)

Least Significant Difference Test with Significance Level .05

Mean (I)	Mean (J)	Mean Difference (I-J)
National Level Female Hockey Players	State Level Female Hockey Players	-1.30*
	District Level Female Hockey Players	-2.05*
State Level Female Hockey Players	National Level Female Hockey Players	1.30*
	District Level Female Hockey Players	-.75
District Level Female Hockey Players	National Level Female Hockey Players	2.05*
	State Level Female Hockey Players	.75

* Significant at .05 level

Perusal of table 2 indicate that state level female hockey players(M=9.42) more significantly believe the role of external factors in sports performance as compared to national female hockey players (M=8.12) who believes that outcome of a match is dependent on their own abilities. The mean difference of 1.30 was found to be statistically significant at .05 level.

Similarly district level female hockey players(M=10.17) more significantly believe the role of external factors in sports performance as compared to national female hockey players (M=8.12) who believes that outcome of a match is dependent on their own abilities. The mean difference of 2.05 was found to be statistically significant at .05 level.

No significant difference was observed on locus of control between state and district level female hockey players. The mean difference of 0.75 was not found to be statistically significant.

On the basis of analysis of data, following results are obtained:

Results :

Internal locus of control in national female hockey players was significantly more as compared to state and district level female hockey players.

Discussion:

In games like volleyball, basketball, chess, tennis, cricket, field hockey etc. the outcome is dependent upon ability which may a combination of psychological, physiological, biomechanical ability. There is no denying the fact that certain factors like home advantage, ground conditions etc. plays a part in outcome of a hockey match but main share in success is ability. Since ability is located in sportsperson the results are not surprising. Because of superior ability the national female hockey players exhibit more magnitude of internal locus of control as compared to state and district level female hockey players. Similar views were also expressed by Locke and Latham (1990).

Conclusion

On the basis of results it was concluded that national female hockey players possess significantly superior internal locus of control as compared to state and district level female hockey players.

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Comparative Study of Agility among Basket Ball Players and Hand Ball Players of Maharashtra State

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Introduction:

.Basketball is a sport played by two teams of five players on a rectangular court. The objective is to shoot a ball through a hoop 18 inches (46 cm) in diameter and 10 feet (3.0 m) high mounted to a backboard at each end. Basketball is one of the world's most popular and widely viewed sports.

A team can score a field goal by shooting the ball through the basket during regular play. A field goal scores three points for the shooting team if the player shoots from behind the three-point line, and two points if shot from in front of the line. The team with the most points at the end of the game wins, but additional time (overtime) is issued when the game ends in a draw. The ball can be advanced on the court by bouncing it while walking or running or throwing it to a team mate. It is a violation to lift or drag one's pivot foot without dribbling the ball, to carry it, or to hold the ball with both hands then resume dribbling.

As well as many techniques for shooting, passing, dribbling and rebounding, basketball teams generally have player positions and offensive and defensive structures (player positioning). Traditionally, the tallest and strongest members of a team are called a center or power forward, while slightly shorter and more agile players are called small forward, and the shortest players or those who possess the best ball handling skills are called a point guard or shooting guard.

Handball also known as team handball, Olympic handball, European team handball, European handball, or Borden ball is a team sport in which two teams of seven players each (six outfield players and a goalkeeper) pass a ball to throw it into the goal of the other team. A standard match consists of two periods of 30 minutes, and the team that scores more goals wins.

Modern handball is played on a court 40 by 20 meters (131 by 66 ft), with a goal in the center of each end. The goals are surrounded by a 6-meter zone where only the defending goalkeeper is allowed; the goals must be scored by throwing the ball from outside the zone or while "jumping" into it. The sport is usually played indoors, but outdoor variants exist in the forms offfield handball and Czech handball (which were more common in the past) and beach handball (also called sandball). The game is quite fast and includes body contact, as the defenders try to stop the attackers from approaching the goal. Goals are scored quite frequently; usually both teams score at least 20 goals each, and it is not uncommon for both teams to score more than 30 goals.

The game was codified at the end of the 19th century in northern Europe, chiefly in Scandinavia and Germany. The modern set of rules was published in 1917 in Germany, and had several revisions since. The first international games were played under these rules for men in 1925 and for women in 1930. Men's handball was first played at the 1936 Summer Olympics in Berlin as outdoors, and the next time at the 1972 Summer Olympics in Munich as indoors, and has been an Olympics sport since. Women's team handball was added at the 1976 Summer Olympics. The Purpose of the Study is to find out the Agility among basket ball and hand ball players of Maharashtra State.

Methodology:

The sample for the present study consists of 20 Male Basket Ball Players and 20 Male Hand Ball Players between the age group of 18-22 Years those who have participated in the Basket Ball Tournaments in Maharashtra State. To assess the speed the Zig Zag Run were conducted among Basket Ball Players and Hand Ball Players by the well qualified technical officials of athletics.

Zig Zag Run Test

equipment required: marker cones, stopwatch, non-slip surface.

procedure: Similar to the Shuttle Run test, this test requires the athlete to run a course in the shortest possible time. A standard zig zag course is with four cones placed on the corners of a rectangle 10 by 16 feet, with one more cone placed in the center. If the cones are labeled 1 to 4 around the rectangle going along the longer side first, and the center cone is C, the test begins at 1, then to C, 2, 3, C, 4, then back to 1.

Discussion

This study shows that Basket ball players are having the better Agility compare to Hand ball players. The Mean Values of Zig Zag Run of Basket Ball Players is 36.30 and Compare to Hand Ball Players is 36.40 . The Present study assessed that the Agility of Basket ball players are better than the hand ball players.

Table-I: Mean values and Independent Samples Test of Zig Zag Run between Hand Ball Players and Basket Ball Players

Variables	Group	Mean	SD	t	P - Value
Zig Zag Run Test	Basket Ball Players	36.30	1.92	-0.180	0.85
	Hand Ball Players	36.40	1.69		

*Significant at 0.05 level

Conclusion:

Agility Training is crucial for Basket ball Players to improve foot work drills as well as to improve speed and cardio respiratory endurance. Agility Training is also key in decreasing injury for basket ball players and to enhance the Performance in Basket ball.

Recommendations:

It is recommended that Motor qualities development coaching must be given by Coaches to promote speed, endurance, strength, agility etc. among the basket ball and hand ball players. Similar studies can be conducted among female players and in other sports and games. This study also useful to develop the speed among basket ball and hand ball players.

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www.topendsports.com

A Comparative Study of Speed among Badminton Players and Ball Badminton Players of Osmania University

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Introduction:

Badminton is a racquet sport played using racquets to hit a shuttlecock across a net. Although it may be played with larger teams, the most common forms of the game are "singles" (with one player per side) and "doubles" (with two players per side). Badminton is often played as a casual outdoor activity in a yard or on a beach; formal games are played on a rectangular indoor court. Points are scored by striking the shuttlecock with the racquet and landing it within the opposing side's half of the court.

Each side may only strike the shuttlecock once before it passes over the net. Play ends once the shuttlecock has struck the floor or if a fault has been called by the umpire, service judge, or (in their absence) the opposing side.

The shuttlecock is a feathered or (in informal matches) plastic projectile which flies differently from the balls used in many other sports. In particular, the feathers create much higher drag, causing the shuttlecock to decelerate more rapidly. Shuttlecocks also have a high top speed compared to the balls in other racquet sports.

The game developed in British India from the earlier game of battledore and shuttlecock. European play came to be dominated by Denmark but the game has become very popular in Asia, with recent competition dominated by China. Since 1992, badminton has been a Summer Olympic sport with five events: men's singles, women's singles, men's doubles, women's doubles, and mixed doubles. At high levels of play, the sport demands excellent fitness: players require aerobic stamina, agility, strength, speed, and precision. It is also a technical sport, requiring good motor coordination and the development of sophisticated racquet movements.

Ball badminton is a sport native to India. It is a racket game, played with a yellow ball made of wool, on a court of fixed dimensions (12 by 24 metres) divided by a net. The game was played as early as 1856 by the royal family in Tanjore, the capital of Thanjavur district in Tamil Nadu, India. It enjoys the greatest popularity in India. Ball badminton is a fast-paced game; it demands skill, quick reflexes, good judgment, agility, and the ability to control the ball with one's wrist.

Games are usually played outdoors during the day. As a result, weather conditions wield a considerable influence, and ball badminton's rules allow the effects of weather conditions to be distributed more-or-less evenly between both teams. More recently, indoor versions of the game have been played under artificial lighting. All-India tournaments are conducted regularly using floodlights in Tamil Nadu, Puducherry, Andhra Pradesh, Telangana and Karnataka. Ball Badminton sport is managed by " Ball Badminton Federation of India" Now Ball badminton game is officially recognised game in India. Total 34 units are affiliated to "Ball badminton federation of india " in which 26 are States units, 5 Public sector units and 3 provisional affiliated units.

The Purpose of the Study is to find out the Speed among Badminton Players and Ball Badminton Players of Osmania University.

Methodology:

The sample for the present study consists of 20 Male Badminton Players and 20 Male Ball Badminton Players between the age group of Osmania University. To assess the speed the 30 M Run were conducted among Basket Ball Players and Hand Ball Players by the well qualified technical officials of athletics.

30 M Run Test:

purpose: The aim of this test is to determine acceleration and speed.

equipment required: measuring tape or marked track, stopwatch or timing gates, cone markers, flat and clear surface of at least 50 meters.

procedure: The test involves running a single maximum sprint over 30 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encouraged to continue running hard through the finish line.

Results: Best of 2 Trials are recorded.

Results:

Table-I: Mean values and Independent Samples Test of 30 M Run between Hand Ball Players and Basket Ball Players

Results of 30 M Run Test	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Ball Badminton Players	20	4.50	0.292	0.653			
Badminton Players	20	3.36	0.259	0.580	-13.067	38.00	.000

The Mean Score of Badminton Players is 3.36 compare to Ball Badminton Players Mean Score of 4.50. That Means Badminton Players are having good speed compare to ball badminton Players.

Conclusion:

Badminton is a popular fast-paced indoor sport. To be successful in badminton you need excellent court speed and agility, with a good background of endurance. The fitness training for badminton should focus on speed, agility and endurance, with also strength and flexibility also important.

Recommendations:

It is recommended that Motor qualities development coaching must be given by Coaches to promote speed, endurance, strength, agility etc. among the badminton and ball badminton players. Similar studies can be conducted among female players and in other sports and games.

References:

Wikipedia Badminton and Ball badminton

www.topendsports.com

Anthropometrical Characteristics of Male Junior volleyball player's Relationship with the Game performance.

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Abstract:

Anthropometric Characteristics place a predominant role to achieve better performance in any sporting activity. Especially for the tall men games like Volleyball and Basketball, The Height, Weight, Arm length, Leg length Arms Span and other body measurements determines the successful execution of skill and game performance ability of the any top level athlete. Therefore, the aim of the study is to determine the game performance of junior male volleyball players, related with the anthropometric measurements. There are 100 male Junior adolescent (16-20 years old) elite volleyball players were selected for this study. Anthropometric assessment was obtained by Body Height, Body Weight, Arm length, Leg length, Arms Span, Extended Arm girth, Thigh girth and Calf girth, in the inter-district Volleyball Championships at Karnataka state. The correlation coefficients obtained between game performance and Anthropometrical variable performance of Male junior Volleyballers is Height ($r=.918$; $p=.000$), weight ($r=.301$; $p=.002$), arm length ($r=.895$; $p=.000$), leg length ($r=.841$; $p=.000$), arms span ($r=.853$; $p=.000$), arm girth ($r=.694$; $p=.000$), thigh girth ($r=.377$; $p=.000$), and calf girth ($r=.605$; $p=.000$) were all found to be highly significant at .000 to .002 level. The results of this study can potentially provide coaches and Physical education experts with useful indications about the use of Anthropometrical assessment for talent identification of elite Volleyballers and the game development.

Key words: Anthropometric characteristics, Male Junior Volleyball players.

Introduction:

Volleyball is a very dynamic sport characterized by various sprints, jumps (Blocking and Spiking) and high intensity court movements that occur repeatedly during the competitions [1]. Successful performance of these movement structures depends greatly on Anthropometric and Physical performance variables [2]. Differences in Physical abilities and Anthropometric variables between athletes of different performance level, regardless of the position, both in volleyball and in other team sports[3-4].

Thus research on anthropometric and Physical performance variables in team sports must take in to account the peculiarities of particular positions. Players in the different positions area required to develop different skills and deal with different tactical tasks during the match. The selection process for certain positions in volleyball usually begins approximately at the age of 13-15 years [5-6].

Anthropometric variables can change during growth and physical abilities can be improved by means of effective training, but starting from positional-tuned levels can make the difference already in youth competition. It is also important to pay attention to the selection of the variables that different the playing positions, as well as the players' levels in specific positions. The most frequently used anthropometric variables that meet those demands are height, mass index and somatotype as well as Physical skill performance [7, 8, 9, 10-11].

Statement of the Topic:

The purpose of the present study is to analyze the relationship of selected Anthropometric characteristics with performance ability of the male junior Volleyball Players.

Delimitations:

The study shall be delimited to the Junior male Volleyballers of Karnataka aged about 16-20 years from different districts.

The study shall be delimited to about 100 subjects (N=100) from Karnataka.
 The study shall be delimited to the certain selected Anthropometric characteristics.
 The study shall be delimited to making a comparative analyses based on junior male Volleyball Players.

Limitations:

As the numbers of subjects male Junior Volleyballers proposed to be selected players among the volleyball players of Karnataka state quite large numbers (N=100)
 No special motivational technique will be employed among test administration and collection of date.
 The subjects are expected to be contact touch with the sport. Variations in respect of counting in training may be a limitation of the study. The rating performance ability of the players may be subjective as the rating is made by expert coaches/ trainers connected with the subjects.

Hypothesis:

For the purpose and objectives of the study the following Hypotheses were formulated:
 The selected Anthropometric ability variables equally contributed to performance ability among the male juniors Volleyball Players. The selected Anthropometric ability variables equally contribute to the performance ability of junior male Volleyball Players taking up different roles in play.

Methodology:

The selection of subjects will be drawn from the different district and club teams of the junior Volleyball players in the state of Karnataka, they represented the volleyball team in district and clubs respectively. About 100 (N=100) male junior Volleyballers will be drawn for the purpose of the study from the different district teams of Karnataka. The Selected subjected will also categorized under five different categories and the specialized roles the perform during the competitive play viz., Middle Hitters, Left Hitters, Right Hitters, Setters and Liberos respectively. The following are the variables selected for the study. The Anthropometrical variables such as Height, Weight, Arm length, Leg length, Arm girth (extended) Thigh girth (mid) and Calf girth. Performance of junior male Volleyballers based on coaches/experts rating in the dependent variables The rating of the junior male volleyball players is subjectively defined based on the outcome of all the skills, techniques, tactics and overall game performance.

Statistical Technique:

Statistical techniques used in this study were, Descriptive statics and Pearson product moment correlations was employed to determine the analysis and interpretation of date.

Analysis and Discussions

Anthropometric variables with the game performance of Male junior Volleyball Players

Table: 01 Pearson's product moment correlations between anthropometric variables and Game performance of the Male Junior Volleyball players.

Variable 1	Variable 2	Correlation coefficient	P VALUE Sig.
Height	Game performance	.918	.000
Weight	Game performance	.301	.002
Arm length	Game performance	.895	.000
Leg length	Game performance	.841	.000
Arms span	Game performance	.853	.000
Arm girth	Game performance	.694	.000
Thigh girth	Game performance	.377	.000
Calf girth	Game performance	.605	.000

The Game performance of Male Junior Volleyball players was correlated with selected anthropometric variables, following results were observed. Game performance was significantly related to all the anthropometric variables selected for the study. We find all significant and positive correlation coefficients between selected anthropometric variables and game performance. The correlation coefficients obtained between game performance and Height($r=.918$; $p=.000$), weight ($r=.301$; $p=.002$), arm length ($r=.895$; $p=.000$), leg length ($r=.841$; $p=.000$), arms span ($r=.853$; $p=.000$), arm girth ($r=.694$; $p=.000$), thigh girth ($r=.377$; $p=.000$), and calf girth ($r=.605$; $p=.000$) were all found to be highly significant at .000 to .002 level. In other words, as the measurements of height, weight, arm length, leg length, arms span, arm girth, thigh girth and calf girth increased game performance also increased linearly and significantly and vice versa among junior level volleyball players.

For Findings:

Junior Volleyball players, significant and positive correlation coefficients were found between selected anthropometric variables and game performance

Game performance was significantly related to most of the selected anthropometric variables (Height, weight, Arm length, Leg length Arm Span & Arm girth) selected for the study for the middle blockers, left hitters, right hitters significantly higher values than the setters and liberos.

Conclusions:

The selected anthropometrical variables such as Height, weight, Arm Length Leg Length Arms span, arms girth, thigh girth and calf girth are significantly and positively correlated to the game performance of Junior volleyball players playing at different roles.

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