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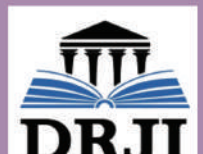
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CONTENTS

Research Articles

Sao Paulo health and wellness forum: South America and global perspectives on evidence based policy and practice

Ricardo R. Uvinha, Kat A. Donnelly, Ian Culpan, Christopher R. Edginton, Giovanna Togashi, Ming-Kai Chin, J. Hans de Ridder, Nara R. C. de Oliveira, Magdalena M. C. Mok, J. Larry Durstine..... 1

Teachers’ teaching approaches in tertiary physical fitness: Implications for formulation of an action plan

Helen Grace D. Lopez 11

Aeropel exercise program: Its effect towards dysmenorrhea pain level

Vienna Lou L. Carbonell 16

Android-based coursepack in Sepaktakraw for students, athletes, and coaches

Michael L. Tolentino, Benedict Al E. Candia 19

A comparative study of body image and eating disorder between hosteller and non-hosteller female students of Chandigarh

Thingnam Nandalal Singh, Swati 27

Effect of guava leaves water on controlling hypertension

S. Roopendar, Shridhar Khiste, Vidhu Kampurath Poduvattil, Rajesh Kumar, Phani Kumari, Urooja Bijris Fatima, Meena Kumari 30

Review Articles

Boxing injuries, concussion, and its impact on brain of boxer

Pradeep Kumar Lenka 33

Balance diet and athlete fitness

Shaili Asthana 37

Research Articles

Tikwi Banug: An ethnography on the contextualized physical fitness indigenous game

Procopio B. Galendez Jr., Raisalam D. Angoy, Nestor A. Castaños Jr., Mingzhe Yang, Buena D. Calunsag, Crispin S. Quilang 39

Personality traits of student-athletes of a comprehensive university and its effect on their perceptions of sports coaches’ coaching behavior

Pauline San Buenaventura, Bryan B. Sikat, Elaine Rianne M. Tamayo, Jerome A. Porto 41



Effect of different packages of yogic practices with roasted garlic intake on plasma glucose, self-esteem, and cortisol variables among men

R. Venkatesan..... 48

Aqua aerobics – fitness with fun

R. Vidhya Sree..... 52

Folk games: Preservation of Catandungan’s identity

Mark Anthony R. Dalipe..... 56

Impact on speed and agility due to specific Kho-Kho training on different preparatory phase

B. Srinivas, B. Sunil Kumar..... 62

Effects of roasted garlic with and without Moringa on mean atrial pressure, TSH hormone, and testosterone among men

R. Venkatesan..... 65



Research Article

Sao Paulo health and wellness forum: South America and global perspectives on evidence based policy and practice

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ABSTRACT

The United Nation's sustainable development goals (SDGs) assemble interdependent goals that focus on building a better and sustainable future for the planet by 2030. These SDGs, particularly Goal 3, Good Health and Well-being, served as the basis for discussion at the Sao Paulo Health and Wellness Forum. At this networking, Brazilian and international scholars and practitioners focused attention on health in relation to technology, physical activity (PA), culture, and education. These topics were discussed with regard to health and well-being in different sociocultural contexts. A qualitative focused group discussion methodology was used to gather data to gain an in-depth understanding of social issues. The outcome report for the Forum, the Consensus Statement, bridges the technology/health/PA nexus. The report highlights emerging insights for implementing local, regional, and national programs that seek to address community health and well-being gaps.

Keywords: Community health workers, Delivery of healthcare, Educational technology, Sustainable development, Universities

INTRODUCTION

Worldwide, the need to improve the health and well-being of individuals and communities is increasing in awareness, acceptance, and action. The need to address the challenges and inequities brought about by environmental degradation, technological advancements, food insecurity, disease, inferior education, gender inequality, water scarcity and quality, and changes to work and leisure is evident. To address these

concerns, strategic plans need to inform both social policy and program implementation. Social policies aimed at improving and enhancing the health, well-being, and quality of life of individuals, communities, and counties are needed throughout the world. The challenges have been acknowledged and accepted by two initiatives. The first initiative, crafted in 1992 as an outcome of the Earth Summit held in Rio de Janeiro, Brazil, is known as Agenda 21, which focused on the establishment of an action plan to promote sustainable development, improve human lives, and take care of the environment (Meakin, 1992).

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This Agenda was adopted in 2015 by all United Nations (UN) Member States, calling for action to reach the goals and targets by

2030. The second initiative is the UN's Sustainable Development Goals (SDGs) (UN, 2015). These 17 UN SDGs were drawn from a 2012 UN conference focused on sustainable development, also held in Rio de Janeiro (Anton, 2012). The SDGs and related targets (the Agenda) set the basis for common action between governmental bodies, civil society, and other stakeholders to address the interwoven nature of the global challenges.

While the Agenda addresses global concerns, distribution of the Agenda across regions is not equal, nor is the approach to consider the specific characteristics and social context of each country, region, or community. To confront this problem, and despite the widespread geography, the emergent economies of the BRICS countries – Brazil, Russia, India, China, and South Africa – share attributes that enable common action toward achievement of the 17 UN SDGs. This commonality pertains to ways of living, health, economic conditions, and well-being. In this context, the BRICS Council of Exercise and Sports Science was created in 2015. With a convergence on exercise, physical activity (PA), and their relationship to health and well-being, the BRICS Council of Exercise and Sports Science encourages an interdisciplinary approach to health promotion, enabling a translation of theoretical evidence into successful practice (Uvinha, *et al.*, 2018; Chin, *et al.*, 2019).

Drawing on the intent of the above principles, goals, and targets, the São Paulo Health and Wellness Forum 2020 – SPHWF 2020 was designed to deepen an interdisciplinary approach to promote holistic health through sports science (SPHWF, 2020). Note that, the Forum was held January 19–21, 2020, 2 months before COVID-19 global shutdown. The previous forums conducted in the United States, Germany, South Africa, and Turkey focused on the pedagogy in health and physical education (PE) with an emphasis on wellness and livability, providing lessons in process and the analysis and synthesis of results and findings (Edginton *et al.*, 2011; Edginton *et al.*, 2014; and Edginton *et al.*, 2016). The previous forum findings resulted in the crafting of statements and other documentations, establishing and contributing to social policy to inform and influence health and wellness issues and concerns worldwide.

SPHWF 2020's aim was to establish future direction and guidance for implementation of SDG 3 in Brazil and South America. The interaction of civil society and young people with local governments is a key process in building consensus and execution of goals and targets that meet both global and local needs (Edginton *et al.*, 2012; Chin and Edginton, 2014). SPHWF 2020's 3-day format included formal presentations followed by cocreation sessions among international leaders, civil and local government representatives, academics, scientists, practitioners, and young people. Several focused and moderated discussions were captured in detail, exploring healthy living and wellness in relationships to technology, PA, culture, and education. Attention was given to the necessity to

broaden local, state, regional, and international action, as well as to adapt the SDG 3 goals considering the unique needs of each country and region.

A direct outcome of SPHWF 2020 was the development of a consensus statement aimed at assisting health and well-being policy development and program implementation in the South American context [Appendix 1].

SPHWF 2020 BACKGROUND AND DEVELOPING A STATEMENT OF CONSENSUS

SPHWF 2020 was organized by the Research and Training Center of the Social Service of Commerce (SESC) for the state of São Paulo, Brazil, in partnership with the University of São Paulo, and with support from the Foundation for Global Community Health. The Forum was endorsed by 17 universities, institutes, and professional associations. Seventy people participated in the Forum, including 13 invited speakers and 57 delegates from eight countries (Brazil, China, New Zealand, Singapore, South Africa, Spain, Turkey, and United States). This diverse group from universities, government, technology companies, and cultural centers is shown in Chart 1. The areas of expertise and experience include: behavioral science, community-building, cultural studies, health, international relations, leisure studies, pedagogy, PE, exercise science, sociology, sustainability, technology, tourism, regenerative agriculture, schools, well-being, workplace behavior, and more.

An important component of SPHWF 2020 was the sharing of innovative strategies and actionable steps to advance thinking and actions to assist health and well-being policy development. The primary means for achieving this sharing were through presentations, moderated group discussions, participant dialogue, and group reflections and some of these methods were, in part, derived from evidence-based practices and policies (Menne *et al.*, 2020). The focused group discussions sought to gain an in-depth understanding of social issues, drawing input from a pre-selected diverse interdisciplinary group (Allen, 2017; Nyumba *et al.*, 2018).

Central to this process is the establishment of good progression of meaning making. The Forum design followed this process: Purpose, Forum design, data collection, data analysis, results/discussion, and [Group] reporting (Morgan, 1997). Centering topics with five corresponding focusing questions were used to guide discussion (Allen, 2017). These questions were pre-prepared and cocreated by the invited speakers based on expertise and previous global forum involvement (Edginton *et al.*, 2011; Edginton *et al.*, 2014; Edginton *et al.*, 2016; and Naul *et al.*, 2012), past research, and the book PE and Health: Global Perspectives and Best Practice (Chin and Edginton, 2014).

Chart 1: Invited delegates names, countries, positions, and titles of their presentations

Delegate	Country	Position	Presentation Title
Prof. Dr. G. Balasekaran	Singapore	President, Asian Council of Exercise and Sports Science (ACCESS) and Health/Fitness Director, American College of Sports Medicine (ACSM)	Sustainable Programs Integrated at School and Workplace for a Healthier Living
Prof. Dr. Ming-Kai Chin	United States	Founder and President, Foundation for Global Community Health (GCH) and Co-Founder and Immediate Past President, BRICS Council of Exercise and Sports Science (BRICSCESS)	Active School and Holistic Health: The Integration of Whole School, Whole Child and Whole Community (WSCC) Model and UN SDG 17
Emeritus Prof. Ian Culpán	New Zealand	Director, New Zealand Centre for Olympic Studies and Immediate Past President of Oceania Region, Federation International e d'Education Physique (FIEP)	The Challenge in Realising New Zealand's Vision of "Being the Best Place in the World for Children and Young People"
Prof. Dr. Hans De Ridder	South Africa	Co-Founder and President, BRICS Council of Exercise and Sport Science and Director, School of Human Movement Sciences, North-West University-Potchefstroom	Healthy Body Composition Profiles to Ensure Healthy Lives
Prof. Dr. Gıyasettin Demirhan	Turkey	Former President, Turkish Sports Sciences Association, Faculty of Sports Sciences, Hacettepe University	The Story of the Human Body Based on Movement and Its Interaction with the Culture It Creates
Dr. Kat A. Donnelly	United States	Founder and Chief Executive Officer of AZENTIVE, LLC and Empower Efficiency, LLC	The Energy-Health Nexus: Holistic Solutions for Interconnected Challenges
Prof. Dr. Patrícia Faga Iglesias Lemos	Brazil	Executive Director, Brazilian Institute of Civil Liability Studies (IBER) and Director, UN Global Compact Cities Program Regional Office, University of São Paulo	Sustainable Development Goals: Public Policies in São Paulo
Prof. Dr. Stephen Kopecky, MD	United States	Immediate Past President, American Society for Preventive Cardiology and Professor of Medicine, Mayo Clinic	Prevention of Chronic Non-Communicable Disease
Dr. Michelle Lombardo	United States	President, OrganWise Guys Inc.	Using Technology to Cost-Effectively Disseminate and Assess Nutrition, Physical Activity, and Healthy Living Content to Diverse Communities of Children
Prof. Maria Luiza Souza Dias	Brazil	Board of Directors, World Leisure Organization (WLO) and Vice President and Latin American Chairwoman, International Sport and Culture Association (ISCA)	Social Service of Commerce (SESC) and the Promotion of Health and Wellbeing
Prof. Dr. Nara de Oliveira	Brazil	Head, Human Movement Sciences Department, Federal University of São Paulo	The UN Sustainable Development Agenda and the Brazilian Physical Education Curriculum: Challenges to Promote Wellbeing and Holistic Health among Children
Prof. Dr. Ricardo Uvinha	Brazil	Co-Founder, Secretary General and Vice President, BRICS Council of Exercise and Sports Science	Good Health and Wellbeing in São Paulo, Brazil: Leisure as a Key Element to Meet the UN Agenda 2030
Prof. Dr. Verónica Violant Holz	Spain	Chief investigator, Acknowledged research group of hospital pedagogy, neonatology and paediatrics and Department of Didactics, University of Barcelona	Research Group and International Observatory in Hospital Pedagogy: Two Innovation Actions to Promote UN SDG Goal 3 and 4 (Quality Education)

Source: SPHWF (2020)

Centering Topic One: Technology and Health

1. How can technology be used to assess and measure performance-based goals, promote accountability, and prove results tied to UN SDG 3 objectives?
2. How can technology be used to promote PA and to accentuate learning that links practice to theory?

Centering Topic Two: Community and Health

1. How can PA, holistic health, and well-being be promoted to link with community-based networking which fosters cultural competence and role-modeling?
2. How can a holistic approach to help people within communities lead a more active lifestyle be established

by serving to advocate, educate, and incorporate physical activities into daily life through formal and informal education?

Centering Topic Three: University Curriculum and Health

1. How can the university curriculum be redesigned to promote active student-centered learning and empower healthy and active lifestyles (integrating skill development, physical fitness, health literacy, nutrition, and leisure processes)?

Five focused discussion groups comprised of a chair to facilitate discussion, a rapporteur who took and collated notes for group report and later analysis, a translator, and delegates from diverse areas of knowledge, disciplines, and professional practices. After the speaker presentations, 5 h were spent discussing and developing recommendations on the five focusing questions. The rapporteur of each group recorded discussion points, organized the findings, and along with the chair composed a summary and final report. These five reports were then presented to all delegates in a 2-h plenary session.

Following the plenary session reports and presentations, formal reports from each group were compiled and passed onto the writing team for analysis. The writing team, on an individual basis, then drafted a series of statements identifying where common messages and strategies converged and unique ideas became apparent. Emerging from this process was a catalogue of strategies and corresponding specific action steps for each question. All results were then synthesized into four iterations of a collective testimony which resulted in the crafting of a draft group consensus statement.

DISCUSSION

Emerging insights from the analyzed data are worthy of a brief discussion. The details of the analysis are provided in the final consensus statement [Appendix 1].

Centering Topic One: Technology and Health

A noticeable and recurrent point emerged from the data that when making use of technology, importance, and primacy should be given to human involvement, interaction, and the forming of relationships. The message, consistent with the World Health Organization’s (WHO) 2017 Health Determinants, as well as the research of Sadeghi and Heshmati (2019), concluded that human involvement/interaction and relating to others are key determinants of health. While the technology/health/PA nexus is an inevitable, supportive and future health development, giving primacy to human engagement and social behavior throughout human lives, is foundational.

Similarly, the symbiotic relationship between humans and nature and its importance was also emphasized, concluding that the technology/health/PA nexus needs to be adaptable, inclusive, sustainable, and based on specific human needs. By understanding these relationships, appreciation is given to how broader physical, social, political, economic, ethical, cultural contexts, and histories that influence the ways people make meaning out of their health and PA-related behaviors and experiences throughout their life (Lawson, 1992). This socioecological appreciation can ensure adoption of appropriate accountability, monitoring, and assessment of performance goals.

Another emerging insight highlighted that for people (e.g., individuals, communities, and societies) to make health and PA positive change, technology should draw on the behavioral sciences and contemporary knowledge of how people learn. Strategies and action steps identified and align with a slide from the Forum presentation by (Donnelly, 2017) and based on the previous academic literature (Ehrhardt-Martinez *et al.*; 2010; Donnelly, 2013). Figure 1 illustrates that how technology and behavior can merge to achieve a change:

Consistent with this, delegates agreed that using technology to enhance health and PA behaviors necessitated the acknowledgement that changing people’s mind-sets, beliefs, and practices were a human learning challenge. Emerging insights suggested that contemporary knowledge of learning and effective approaches to utilize this knowledge (pedagogy) has much to offer. The work of Festinger (1957) and Mezirow (2009) becomes useful in effecting behavior change. Both scholars argue that for a change in behavior and a change in meaning to occur (i.e., effective learning), disorientating, misalignments, or mental conflicts are encouraged. In practice, this process involves personal and collective beliefs, assumptions, and ways of behaving are challenged and questioned for their accuracy. Both Festinger (1957) and Mezirow (2009) argued that such cognitive dissonance

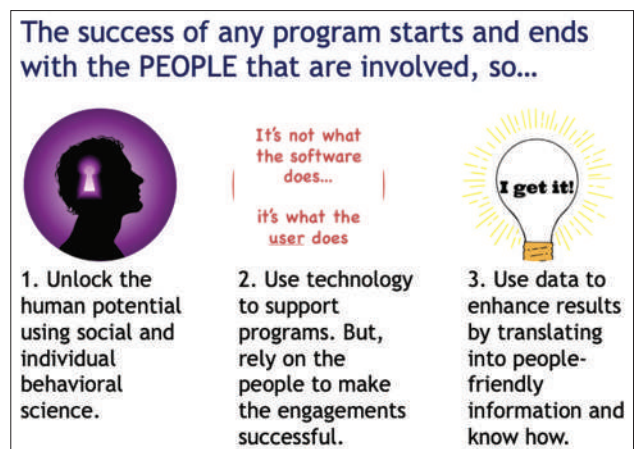


Figure 1: Merging behavior and technology to achieve culture, Source: Donnelly (2007)

encouraged people to develop and use critical self-reflection to consider their beliefs and experiences, and over time, change dysfunctional and destructive health behaviors.

Centering Topic Two: Community and Health

Emerging from the data analyzed was that any attempt by a community to improve the health and well-being of its members needed to give priority to focusing on a holistic perspective. This perspective included giving cognizance to the multiple dimensions of health such as the physical, social, mental, emotional, and spiritual dimensions. Furthermore, for many indigenous cultures, the health dimension of the land is also emphasized as important (Bishop *et al.*, 2007). Such positioning of health aligns with the WHO (2017) conceptualization and its corresponding health determinants of: Income and social status; education; physical environment; employment and working conditions; social support; culture; personal behavior and coping skills; health services; and gender.

This emerging insight reinforced recent WHO (2017) literature on emphasizing the importance of health and PE programs to move away from a deficit medical model for health and/or sports performance models for PE to a holistic growth and development approach. Such a move is supported by involving the whole family in health initiatives, using rewards, emphasizing the fun aspects of PA and games, tapping into social networks, and role modeling to motivate and create joyfulness in changing behaviors. The fun, enjoyment, creativity, spontaneity, and interactive engagement dimension to healthy active lifestyles are key in developing momentum within community initiatives.

A noteworthy insight was that the context of community life largely determines individual and community health status and need. Insights emphasized that community contexts are associated with diverse health outcomes and a better understanding of local characteristics, such as urbanity and ethnic composition are required for the promotion of widespread holistic health when implementing effective community programs and policies. Understanding the community's ability to prioritize problems, implement collective plans and actions, develop and highlight leaders and role models, and constantly evaluate to act on the characteristics of a given territory (Schultz *et al.*, 2018 and McKenzie-Mohr and Smith, 1999).

This community-based approach is present in the UN SDGs social policy priorities that encourage local as well as global dialogue. If the characteristics of the geographic area are not considered, health promotion programs are unlikely to be sustainable and persistent (Machado *et al.*, 2017 and McKenzie-Mohr and Smith, 1999). Furthermore, SPHWF 2020 delegates emphasized the need to form supportive social networks and collect systematized, integrated, and accessible data to generate information for planning and monitoring well-being programs.

These recommendations align with the literature (Soril *et al.*, 2018 and McKenzie-Mohr and Smith, 1999). The forum further defined them as fundamental requirements, as was a practical user-friendly approach in using low-cost technologies to improve the quality of health care, as well as enable evidence-based policy decisions (Soril *et al.*, 2017).

Another particularly important consideration was associated with cultural competence of a successful program and the corresponding engagement with diverse populations. For many indigenous people, understanding holistic well-being is deeply rooted in the inter-connectedness of the past to the present, the spiritual with the temporal, and the land with its people. The importance of the land extends to all cultural practices, including health, PA, games, and sport (Culpan *et al.*, 2008). For many, the land is a source of spiritual sustenance and consequently, along with the environment, spirituality, language, and traditional customs and practices, interaction with the land is an essential part of individual and collective well-being (Bishop *et al.*, 2007).

For community-based health and PA programs to be enduringly effective, cultural needs and the world views of indigenous people's must be acknowledged if they are empowered to participate as citizens of their nation and the world, benefiting from high standards of living, education, and health (Bishop *et al.*, 2007). Delegates stressed that such an approach needs to be integrated into well-being programs utilizing the science of behavior change and drawing on the principles of learning. Here, holistic well-being programs need to be culturally responsive and draw on appropriate pedagogies (teaching) and learning approaches that consider cultural knowledge, techniques, and contexts. This consideration is particularly applicable to recognizing cultural health knowledge, and people's previous health-related experiences – all of which make pedagogical and learning encounters meaningful and relevant (Gay, 2013).

Highlighted by the delegates and supported by the work of Ladson-Billings (1995) were the importance and meaningfulness of dynamic or synergistic relationships between family, home, community, work, service, social organizations, and school culture. The successful employment of culturally responsive pedagogies in health contexts requires participants to personally experience improvements in achieving health-related targets. Culturally, responsive pedagogies also need to foster sustained personal interactions with the participant's cultural heritage and empower practitioners to critically identify, challenge and transform health-related practices that are exploitive, unjust, and not applicable to specific need.

Centering Topic Three: University and Curriculum

Many delegates argued that present university culture and academic practice generally struggled to keep pace with the

rapid changes in society. Highlighted was the need for systemic change to remain authentic and relevant. For systemic change, Bawa (2017) argues that an open and unambiguous agenda would necessitate the establishment of durable connections with the local context but also warranting the need for a humanistic understanding to global initiatives and challenges. For universities to address change in this manner, this author argues universities can be more responsive to new realities and challenges within local contexts.

One such global reality acutely felt at the local level is centered around the need for development of healthy active lifestyles and the availability of affordable, healthy, and nutrient dense food. SPHWF 2020 delegates highlighted that while health and well-being practices should be at the core of the university experience, health and well-being practices are seldom given primacy by the academy's curriculum. Delegates saw this issue as anomalous, given the plethora of health statistics and academic literature calling for such an area to be given full attention. This issue was also an example of universities losing touch with the realities of the contemporary world and failing to cater for the health and well-being needs of their academic community.

Aligning the role of the university to contemporary issues of holistic health, converging with the current transformations in the ways of life, the labor market, and the new professional skills and competences necessary for a sustainable world was considered fundamental. This consideration necessitates updating the university curricula to prepare competent graduates acting in a sustainable manner and avoiding future economic, social, and health crises.

However, this change is not simple and requires a collaborative effort involving administrators, teachers, and students, concentrating on technical, cultural, and political factors (Menne *et al.*, 2020). The emergent argument stressed that if well-being and active healthy lifestyle habits are not effectively incorporated into university life and role modeled, graduating students who are all potential community leaders and cannot be expected to integrate health and well-being practices in life, at work, and at home. This non-alignment threatens the sustainability of many health and well-being community and global initiatives.

The relevance of the university's role in society and in this case, the promotion of the health and well-being of their immediate community (staff, students, and alumni) and general population is complex and challenging. Acknowledging the enormous and rapid changes and their impacts taking place in many human undertakings is required. As Bawa (2017) specifies, many advancements are acutely contextual (e.g., responding to a specific community's health and well-being needs) and others are powerful global initiatives (e.g., technological innovations

impacting on work/life balance). He argues changes and advancements that are globally-locally inter-connected.

Universities that are bridging the global/local nexus, acknowledging, reacting to new and emerging multiple knowledge systems, and ensuring their curriculum meshes with diverse knowledge platforms are well placed to play a critical role in attending to the complexities of contemporary challenges. SPHWF 2020 delegates identified the health and well-being of the university's immediate community (staff, students, and alumni) as a significant challenge and urge universities, throughout the world, to accept this challenge and systematically work toward addressing this health-related concern. This, delegates argued, would be the first step in advocating for health and well-being for the general population.

LIMITATIONS

The findings from the Forum discussions and subsequent qualitative analysis cannot be generalized across all geographical, cultural, and political contexts. SPHWF 2020 brought together experts on holistic health and well-being, where additional participants from sectors would bring other findings and recommendations to the consensus statement. Furthermore, SPHWF 2020 pragmatically restricted one of the centering topics to the university and curriculum. Future initiatives on health and well-being could shift the attention to include, for example, centering topics focused on government ministries including health, parents, medical practitioners, and researchers, the school curriculum involving principals, teachers, and education leaders.

This change would complement and augment SPHWF 2020 and underscore the ubiquitous need for specific and continued efforts aimed at improving and enhancing the health, well-being, and quality of life of individuals, communities, and counties. Noteworthy is that this Forum took place in January 2020, before the COVID-19 pandemic period. If such as event was carried out in a virtual way, information would possibly reach more participants, allowing a focus on resolving issues not perceived before the pandemic.

CONCLUDING COMMENTS

The 17 UN SDGs provide cohesive direction for the global community to become healthier individuals, but the uniqueness of each country, region, and local culture for each SDG is often overlooked. Because every culture is different, PA participation in each culture is different. The intention of staging the SPHWF 2020 and gathering experts from different continents and locally from interdisciplinary areas in health and wellness was to serve as a starting model for similar forums in other parts of the globe. Note that, goal number SDG 3 does not specifically target PA.

Therefore, the goal of SPHWF 2020 was to integrate using a holistic approach to include PA to provide direction, strategies, and tactics for implementation of SDG 3 (Health and Well-Being) in Brazil and South America as outlined through this consensus statement. Each country world-wide is to use the model presented from this forum to extend the other 16 UN SDGs' basic premises in developing their own model and to go the next step in the development of goals for their country. Similar future forums in different countries and on different continents can be conducted for each of the 17 UN SDGs with resulting recommendations for the future strategies and action plans by following the successful experience in São Paulo.

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REFERENCES

- Allen M. The SAGE Encyclopedia of Communication Research. London: SAGE Publications; 2017.
- Anton D. The 2012 United Nations conference on sustainable development and the future of international environmental protection. *Consilience* 2012;7:64-72.
- Bawa A. Redesigning the Curriculum for the 21st century. Global University Network for Innovation's; 2017. Available from: <https://www.universityworldnews.com>
- Bishop R, Berryman M, Cavanagh T, Teddy L. Te Kotahitanga Phase 3 Whānau Tangata: Establishing a Culturally Responsive Pedagogy of Relations in Mainstream Secondary School Classrooms. Wellington, New Zealand: Ministry of Education; 2007.
- Chin MK, Anderson E, De Ridder JH, Uvinha RR, Durstine JL. BRICS to BRICSCESS: A perspective for practical action in the promotion of healthy lifestyles to improve public health in five countries. *J Sport Health Sci* 2019;8:520-3.
- Chin MK, Edginton CR. Physical Education and Health: Global Perspectives and Best Practice. United States: Sagamore Publishing; 2014.
- Culpan I, Bruce J, Galvan H. Toward a bicultural view of Olympism within New Zealand physical education: An emerging journey. In: Ren H, Da Costa L, Miragaya A, Jing N, editors. Olympic Studies Reader: A Multidisciplinary and Multicultural Research Guide. Vol. 1. China: Beijing Sport University Press; 2008. p. 129-46.
- Donnelly K. Empowering Consumers to Reduce Residential Energy Waste: Designing, Implementing, and Evaluating the Connecticut Neighbor to Neighbor Energy Challenge. (Publication No. 0829288) Doctoral Dissertation, Engineering Systems Division. Cambridge, MA, Massachusetts Institute of Technology. United States: ProQuest Dissertations and Theses A and I; 2013.
- Donnelly K. Leveraging Community-based Social Marketing for Utilities. Ontario, CA: Emerging Technologies Summit; 2017.
- Edginton CR, Chin MK, Geadelmann P, Ahrabi-Fard I. Global forum for physical education pedagogy 2010 (GoFPEP 2010): Health and physical education pedagogy in the 21st century—a statement of consensus. *Int J Phys Educ* 2011;48:33-41.
- Edginton CR, Chin MK, De Oliveira WF, Uvinha RR. Global forum for physical education pedagogy 2010: Health and physical education pedagogy in the 21st Century—a statement of consensus. *Health Soc Change* 2012;3:5-13.
- Edginton CR, Chin MK, De Ridder JH, Moss SJ. The global forum for physical education pedagogy 2014 (GoFPEP 2014): Physical education and health-global perspectives and best practice. *Int J Phys Educ* 2014;51:29-40.
- Edginton CR, Chin MK, Demirhan GI, Aşçi F, Bulca YE, Erturan ÖE. Global forum for physical education pedagogy 2016-technology, networking and best practice in physical education and health: Local to global. *Int J Phys Educ* 2016;53:28-48.
- Ehrhardt-Martinez K, Laitner J, Donnelly K. Advanced Metering Initiatives and Residential Feedback Programs: A Meta-review for Economy-wide Electricity Saving Opportunities. Washington, DC: American Council for an Energy Efficiency Economy, Overbrook Foundation; 2010.
- Festinger L. A Theory of Cognitive Dissonance. United States: Stanford University Press; 1957.
- Gay G. Teaching to and through cultural diversity. *Curricul Inq* 2013;43:48-70.
- Ladson-Billings G. Toward a theory of culturally relevant pedagogy. *Am Educ Res J* 1995;32:465-91.
- Lawson H. Toward a socio-ecological conception of health. *Quest* 1992;44:105-21.
- Machado J, Martins WJ, Souza M, Fenner A, Silveira M, Machado A. Healthy and sustainable territories: Contribution to collective health, sustainable development and territorial governance. *Com emciên Saúde* 2017;28:243-9.
- Mckenzie-Mohr D, Smith W. A. Fostering Sustainable Behavior: An Introduction to Community-based Social Marketing. 3rd ed. Gabriola, BC: New Society Publishers; 1999.
- Meakin S. The Rio Earth Summit: Summary of the United Nations Conference on Environment and Development. New Delhi: Library of Parliament, Research Branch; 1992.
- Menne B, De Leon EQ, Bekker M, Mirzikaşvili N, Morton S, Shriwise A, *et al.* Health and well-being for all: An approach to accelerating progress to achieve the sustainable development goals (SDGs) in countries in the WHO European Region. *Eur J Public Health* 2020;30:i3-9.
- Mezirow J. Transformative learning theory. In: Mezirow J, Taylor EW, editors. Transformative Learning in Practice: Insights from Community. United States: Jossey-Bass; 2009.
- Morgan DL. Focus Group as Qualitative Research. Qualitative Research Series. Vol. 16. United States: SAGE Publications; 1997.
- Naul R, Edginton CR, Chin MK. Global forum for physical education pedagogy. *Glob J Health Phys Educ Pedag* 2012;1:166-8.
- Nyumba T, Wilson K, Derrick C, Mukherjee N. The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods Ecol Evol* 2018;9:20-32.
- SPHWF. São Paulo Health and Wellness Forum. 2020. Proceedings. Sao Paulo, University of Sao Paulo. Available from: <http://www.forumodssp2020.org>
- Sadeghi R, Heshmati H. Innovative methods in teaching college

- health education course: A systematic review. *J Educ Health Prom* 2019;8:103.
29. Schultz JA, Collie-Akers VL, Fawcett SB, Strauss WJ, Nagaraja J, Landgraf AJ, *et al.* Association between community characteristics and implementation of community programs and policies addressing childhood obesity: The healthy communities study. *Pediatr Obesity* 2018;13:93-102.
 30. Soril LJ, Mackean G, Noseworthy TW, Leggett LE, Clement FM. Achieving optimal technology use: A proposed model for health technology reassessment. *SAGE Open Medicine*, 2017;5:61.
 31. Soril LJ, Seixas BV, Mitton C, Bryan S, Clement FM. Moving low value care lists into action: Prioritizing candidate health technologies for reassessment using administrative data. *BMC Health Serv Res* 2018;18:640.
 32. UN. United Nations. United Nations: Sustainable Development Goals; 2015. Available from: <https://www.un.org/sustainabledevelopment/sustainable-development-goals>
 33. Uvinha RR, De Oliveira NR, De Ridder JH, Chin MK, Durstine JL. The BRICS council for exercise and sport science (BRICSCESS): A new era has dawned. *J Sport Health Sci* 2018;7:425-8.
 34. World Health Organization. World Health Organization Health Determinants. 2017. Available from: <https://www.who.int/news-room/q-a-detail/determinants-of-health>

APPENDIX 1

APPENDIX 1: CONSENSUS STATEMENT (SÃO PAULO HEALTH AND WELLNESS FORUM 2020)

Invited presentations and participation in focus group discussions by academy, government officials, policymakers, health care leaders and workers, PE teachers, sport and leisure professionals, sport scientists, physicians, and community members attending the São Paulo Health and Wellness Forum 2020 involved analyzing five focused questions. These questions focused on topics such as the use of technology, using community-based social networking to promote PA, health, and well-being, promoting a more active lifestyle, and redesigning university curriculum to promote active student-centered learning. Through the discussion and analysis process, numerous strategies and action steps were identified. Combined these finding make up the consensus statement.

TECHNOLOGY AND THE ASSESSMENT AND MEASUREMENT OF PERFORMANCE GOALS

Use existing technology and data to provide education and corresponding accountability measures to create and evaluate individual behavior changes:

- a. Develop applications for existing data platforms to make larger impacts on health-related behaviors; and
 - b. Use mobile devices to build on existing applications that provide guidance, recommendations, reminders, measurement, and monitoring of individual health enhancing practices
 - c. Leverage existing data sources, such as
 - i. Brazilian Health data infrastructure, DATASUS (<http://datasus.saude.gov.br/>)
 - ii. Federal VigiTel, telephone survey for the surveillance of risk, and protection factors for chronic diseases (<http://tabnet.datasus.gov.br/cgi/vigitel/vigteldescr.htm>)
- iii. Other existing surveys (through public and private healthcare)
 - iv. Google and other mapping, geocoding, layering, and crowd finding tools to connect people to nearby nature reserves and share the PA going on in the area at the time (i.e., to create a “leisure” mobile phone tool).
- Employ behavioral science, cutting edge knowledge on learning and best practices to promote and support PA adherence, and other holistic health enhancements:
- a. Turn contemporary research knowledge into use friendly accessible and actionable information to empower individuals seeking to make health enhancing behavioral changes
 - b. Collect and provide feedback and support for PA, body measurements, happiness assessments, meditation, food and diet, sleep quality, etc. to promote improvements in health and well-being habits; and
 - c. Gamify technology tools to tap into people’s love of games, competition and fun.

Partner with existing local organizations to leverage social connections to achieve common core values and drive awareness, motivation, ability, and participation, such as early childhood, schools, summer feeding, afterschool, clinics, SESC community centers, weight watchers, sports leagues, sports and other active clubs, cooking classes, and yoga studios. Provide effective and accountable leadership at all levels to implement and achieve national health-enhancing policies:

- a. Develop an effective national and comprehensive health and well-being database. The creation and maintenance of the databases are the responsibility of the public health system users
- b. Ensure that individuals and collectives receive encouragement and autonomy to make use of this database
- c. Ensure existing data are used ethically and protects privacy and private information
- d. Develop digital competence, user-friendly common language, messaging, and technical terminology

- e. Encourage the use of technology in schools, but take care not to overdo technology reliance and ignore how the science of how the brain learns (e.g., manual processes); and
- f. Directly support PE and health teachers, as well as introducing health professionals and curriculums into schools.

TECHNOLOGY, HEALTH, AND PA

Promote the awareness of existing resources:

- a. Leverage health professionals to help educate the public by simplifying medical concepts and actionable steps and to act as the conduit between health-care providers and individuals
- b. Use mobile devices for public service announcements to drive awareness of existing resources, as well as to challenge and set social norms and expectations related to holistic health; and
- c. Engage governments and corporation partnerships to collaborate to establish common core health and well-being values and practices

Design evidence-based and science-based best practices supported by technology:

- a. Use technology to provide real-time feedback, encouragement, and advice
- b. Make PA and other health practices fun; and
- c. Incorporate individual and social behavior science to foster the learning of health practices.

Use cutting-edge knowledge on learning as a central focus for developing new, enduring health habits based on changing behaviors, and changing meaning/mindsets:

- a. Maximize the impact of learning by utilizing contemporary learning practices
- b. Create effective learning environments that use critical pedagogical processes
- c. Recognize the importance of both formal and informal learning; and
- d. Maximize learning, pedagogical processes, models, and approaches.

Use technology to connect people, to enhance contemporary learning processes, and to assist in the implementation and updating of best practices for healthy living:

- a. Tactics include devices and applications to increase an individual's access to health community programming to empower better individual and community health especially toward nutrition and PA
- b. Foster social media, use, sharing, and teaching; and
- c. Create a "Map of Health Opportunities" and accentuate learning possibilities using territory mapping of health locations.

HEALTH, PA, AND WELL-BEING AND COMMUNITY-BASED SOCIAL NETWORKING

Change the cultural philosophies of health and PE programs from a deficit medical model (health) and/or sport performance (PE) to a growth and development holistic approach:

- a. Focus on learners/participants achieving success and enjoyment, as well as developing an understanding to change behaviors
- b. Acknowledge cultural traditions, customs, and practices of specific individuals and communities from which they belong
- c. Focus on analyzing cultural, social, and environmental aspects of well-being to ensure that culture drives well-being programs.

Use Bandura's Role Modeling theories of imitation and social learning to provide evidence-based steps for modeling health enhancing behaviors.

- a. Use relevant and successful role models (i.e., trusted messengers, wellness champions). This is particularly important for indigenous and diverse communities
- b. Acknowledge, integrate, and role model the complexity of local culture, local history, customs, and traditions into well-being programs
- c. Follow the SESC implementation model and fostering the SESC network further into the community; and
- d. Ensure the major health-care facilitators, health professionals, and physical educators possess the fundamental skill of qualified listening to encourage health and PA practices.

Use local resources, partnerships, and practices by engaging where people live and network:

- a. Create user-friendly initiatives that cater to the community's needs and wishes; and
- b. Initiate programming within the community that involves the whole family.

HOLISTIC HEALTH AND PROMOTING ACTIVE LIFESTYLES

Use contemporary learning theories and approaches to advocate for and educate about the benefits and contributions of physically active lifestyles that ensure holistic well-being:

- a. Consult with and understanding community members' thinking and need (including both young and mature people) on health, PA, and well-being, and cocreate well-being programs
- b. Use a cross discipline approach to develop territory mapping that identifies and includes local leaders from

non-profit organizations operating independently of government in program designs; and

- c. Ensure that community culture drives the constructed well-being programs.

Teach holistic approaches to well-being including mindfulness, respect for self, others, society, and the environment (i.e., a socioecological perspective):

- a. Implement tactics, such as including encouraging face to face interactions, communication, and engagement with others by developing interpersonal and intrapersonal communication skills
- b. Promote simple behavior changes (i.e., small steps one at a time that everyone in the community is working toward at the same time)
- c. Prioritize self-care, such as adequate sleep and rest, appropriate eating habits, daily PA, and going without a mobile device during mealtime and bedtime; and
- d. Work toward holism, involving the arts, meditation, financial planning and management, and stress reduction strategies.

Examine educational models to ensure that young people receive balanced education between formal schooling and informal learning (e.g., leisure, play, family, work, self-discovery, and social engagements with friends):

- a. Implement tactics, such as including ensuring learning has a strong fun dimension where creativity, spontaneity, and interactive learning is fostered
- b. Promote the engagement of local schools, families, communities, and health professionals in the achievement of healthy active balanced lifestyles (e.g., consider the socioecological perspective)
- c. Up-grade PE programs and facilities in schools and use PA, sport, and leisure as a tool for education and well-being; and
- d. Make school facilities available in non-school time for non-government organizations to run coconstructed health and well-being programs for the community.

UNIVERSITY CURRICULUM AND PROMOTING HOLISTIC HEALTH AND WELL-BEING

Reconceptualize the role of the university in society to better align with contemporary times to ensure that health and well-being practices are at the core of the student experience:

- a. Teach and promote health and well-being and balanced lifestyles
- b. Integrate well-being into all student study programs
- c. Evaluate whether to make health and well-being education (e.g., health education, PE, leisure, cooking, and sport studies) mandatory or optional in the university curriculum
- d. Incentivize universities to lead by example by emphasizing the importance of all staff role-modeling appropriate well-being practices
- e. Encourage universities to partner or collaborate with organizations with similar health and well-being goals
- f. Incorporate new and more effective learning methodologies that promote active learning into curriculums
- g. Broaden university entrance requirements and study credits by formally recognizing the academic worth of leisure, cultural, art, music, PA/movement experiences, and courses of study
- h. Encourage universities to make a strong contributing commitment to local communities by developing and promoting “health and well-being service type programs” for students and staff
- i. Make health-related knowledge accessible and useful for everyone by ensuring science, theory, and academic research is easily understood by diverse populations
- j. Develop ready to implement toolkits, social media messages, podcasts, and other technological media to make new knowledge on health and well-being available to all; and
- k. Implement health- and PA-related programs based on academic literature and best practice. Programs should be easy to understand, fun, and sharable.



Research Article

Teachers' teaching approaches in tertiary physical fitness: Implications for formulation of an action plan

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ABSTRACT

Physical Education's poor condition of teaching combined with other contributing factors, contributed to students' low fitness levels, and degraded the subject's status. Today, physical education has been ignored and has been a killer for the majority of people worldwide; many have died as a result of disease. As technology do more and more work, men are engaging in an increasing quantity of physical activity related with their surroundings. The goal of this study was to ascertain the extent to which various teaching strategies are used in physical fitness 111, specifically at the University of Southern Mindanao. According to the study's findings, teachers' level of application of teaching approaches in physical fitness is high; however, when students are grouped by gender and age, there is a significant difference in their evaluations of teachers' level of application of teaching approaches in physical fitness. Finally, a proposal for implementation of the action plan is made. The researcher indicated that physical education teachers might use the study's findings as a springboard for planning and devising programs aimed at developing and improving teaching methods. On the other hand, school administrators should reassess their policies and practices regarding teacher development. In addition, instructors should apply for and take advantage of any professional development opportunities offered by the government or other organizations through scholarships and other incentives.

Keywords: Physical education, Physical fitness, Teaching approaches

INTRODUCTION

Low fitness levels among students have been ascribed to a variety of issues, including a deterioration in the field's reputation for quality instruction. Physical education has been overlooked and has been a leading cause of death for the majority of people in the globe, many of whom have died as a result of illness brought on by lack of physical activity and the convenience of technology. Today's physical education programs offer long-term health benefits and options for how to spend one's free time, as well as preparation for the physical demands of daily living (2002).

There are millions of people in the Philippines who are concerned about their level of physical fitness, given that the country is still in its early stages of development. There has

been a lack of awareness about the necessity of being physically fit among the general population. During adolescence, bone density and composition increase. Efficient muscle-to-neuron communication results in improved physical performance with less effort, making it more efficient. In spite of the fact that Filipinos are known to benefit from physical fitness, it has not received the attention it deserves (Aparis,2002).

Since there is a lack of knowledge about how to teach physical education as an academic subject, many teachers in Davao City are still relying on the teachers demonstration and discussion to teach the subject, which results in students not focusing on or considering physical education as part of their academic studies (Tolon, 2003). Students' physical, intellectual, emotional, and social well-being are all taken into consideration while deciding on a learning activity, according to the study. It is the student's responsibility to learn and, hence, this study must take into account the many ways in which pupils learn best to improve their performance.

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METHODOLOGY

Research Design and Procedures

This research was carried out using a descriptive survey design. Using this strategy, teachers can be evaluated on their level of application in teaching methods. Descriptive research, according to Batingal (2004), includes tasks that present conditions about the nature of a group of people that require analysis, enumeration, and measurement. This type of study necessitates the gathering of current knowledge about the issue.

Research Respondents and Materials

The researcher utilized a questionnaire to collect data. There are two sections to the survey. Part 1 focuses on the demographics of the participants. Teaching methods were the emphasis of the second part. Overall, there were 30 indicators with five components in each. Researchers built it themselves before handing it in for correction and improvement to their thesis advisor. It was sent to a panel of experts who are also members of the thesis committee for content validity.

A total of 300 students from the University of Southern Mindanao's Kabacan campus, North Cotabato, participated in the study, which was conducted in the first semester of 2009–2010. Sample size was determined using the Slovin formula from 2616 students. There were 137 men or 39.48% of the total student body and 210 women or 60.52%. However, there were only 15 teacher-respondents in the study, and the researcher utilized a universal sampling technique.

To determine the responses of the participants, the following scale was used [Table 1]:

Data Analysis and Interpretation

This research was carried out using a descriptive survey design. Using this strategy, teachers can be evaluated on their level of application in teaching methods.

The following steps were observed by the researcher while collecting data. Obtaining permission to carry out the experiment, research authorization was requested from Mr. Judy L. Garcia, Dean at the University of Southern Mindanao's Institute of Physical Education and Recreation Center, Management and Retrieval of the Scientific Equipment. The researcher conducted the questionnaire to the students of Physical Education 111 (Foundation of Physical Education) after receiving the clearance letter. After the respondents had completed the survey with the help of other PE teachers, the questionnaire was retrieved. In the third step, data collation and tabulation are carried out. The information was obtained, totaled, and then analyzed statistically.

The following statistic tools were used in the study.

Table 1:

Range of Means	Description	Interpretation
4.50–5.00	Very High	This means that the teaching approach is always applied by the teacher
3.50–4.49	High	This means that the teaching approach is often applied by the teacher
2.50–3.49	Moderate	This means that the teaching approach is sometimes applied by the teacher
1.50–2.49	Low	This means that the teaching approach is seldom applied by the teacher
1.00–1.49	Very Low	This means that the teaching approach is not applied by the teacher

Mean

This was used to determine the level of application of teaching approaches by the teachers.

t-test

This was used to determine the significance of the difference in the level of application of teaching approaches by the physical fitness teachers when grouped by gender and age.

For the decision rule in accepting and rejecting null hypothesis, α was set at 0.05 level of significance. Observations obtained from the data imply that physical fitness teachers' use of instructional methodologies was found to be high, with a mean score of 3.61. With a mean score of 3.90 for directed instruction; 3.76 for task teaching; 3.61 for guided discovery, and a 3.54 for cooperative learning, they demonstrated a high degree of application. There was a moderate level of application in the field with a mean score of 3.46 and 2.81 for student-designed education.

Teacher methods to physical fitness were applied equally by both male and female teachers, as shown by a computed *t*-value of 1.961, which is smaller than the tabular value of 2.201. The null hypothesis was accepted because the results were insignificant. As indicated by the *F* calculated value of 4.186, which is higher than the tabular value of 4.103, there was a substantial difference in the level of implementation of teaching methodologies by teachers in physical fitness. Due to the significance of the finding, the null hypothesis was rejected. We came up with a strategy for moving forward based on the information we gathered.

RESULTS AND DISCUSSION

This chapter presents the results of the findings. The topics are discussed and presented as follows: Level of Application of Teaching Approaches of Teachers in Physical Fitness; Significance of the Difference in the Level of Application of

Teaching Approaches of Teachers in Physical Fitness when Grouped by Gender and Age; and Action Plan [Table 2].

Direct Instruction

The teachers reveal the high level of application of the method with overall mean score of 3.90. Likewise, they often give the student a clear idea of what to be learned in physical fitness with a mean score of 4.13 or high level. Moreover, they often give explanation and instruction clearly regarding fitness and its implication with a mean score of 3.98 or high. The teachers often perform in front of the students until many are familiar with the routine of movements with a mean score of 3.90 or high. Furthermore, the teachers often allow students to grasp one skill or movement before moving to the next level with a mean score of 3.78 or high. They often establish a productive learning environment to meet the needs of individual student with the mean score of 3.72 or high level. The level of application of teaching approaches of teachers in physical fitness in terms of direct instruction is high. This means that they often give the student a clear idea of what to be learned in physical fitness; give explanation and instruction clearly regarding fitness and its implication; perform in front of the students until many are familiar with the routine of movements; allow students to grasp one skill or movement before moving to the next level; and establish a productive learning environment to meet the needs of individual student.

Task Teaching

The teachers disclose a high level of application with overall mean score of 3.76. However, they often allow students to create their own interpretation and movement with a mean score of 3.79 or high level. They often provide students with a structured opportunity to work on their own group with a mean score of 3.78 or high level. Moreover, they often check students

Table 2: Level of application of teaching approaches of teachers in physical fitness in terms of direct instruction

Item	Mean	Descriptive level
The teachers		
1. Giving the student a clear idea of what to be learned in physical fitness	4.13	High
2. Giving explanation and instruction clearly regarding fitness and its implication in our body	3.98	High
3. Performing in front of the student until many are familiar with the routine of movements	3.90	High
4. Allowing students to grasp one skill or movement before moving to the next level	3.78	High
5. Establishing a productive learning environment to meet the needs of individual student	3.72	High
Overall	3.90	High

to see how they're doing with their group practices with the mean score of 3.77 or high level. Furthermore, the teachers often practice different specified tasks at their own pace with a mean score of 3.75 or high level. They often direct their students to warm up on the mats/floor by taking their weight on different parts of the body and getting good extension of movements with the mean score of 3.71 or high level.

The level of application of teaching approaches of teachers in physical fitness in terms of task teaching is high. This means that they often allow students to create their own interpretation and movement; provide students with a structured opportunity to work on their own group; check students to see how they're doing with their group practices; practice different specified tasks at their own pace; and direct their students to warm up on the mats/floor by taking their weight on different parts of the body and getting good extension of movements.

Cooperative Learning

The teachers reveal a high level of application of method with overall mean score of 3.54. However, they often check the learning group if they can perform and execute the skill before any member can go back to their home group with the mean score of 3.66 or high level. They often divide the students into different groups as their home group with a mean score of 3.61 or high level. They often allow leaders to teach physical fitness exercise or movement to their home group with a mean score of 3.57 or high. Moreover, they often assign student to learn all the movements in every group with a mean score of 3.52 or high. They sometimes utilize video tape demonstration of all phases of physical fitness exercise as shown to the class with a mean score of 3.33 or moderate level.

The level of application of teaching approaches of teachers in physical fitness in terms of cooperative learning is high. This means that the teachers often check the learning group if they can perform and execute the skill before any member can go back to their home group; divide the students into different groups as their home group; allow leaders to teach physical fitness exercise or movement to their home group; and assign student to learn all the movements in every group. However, they sometimes utilize video tape/demonstration of all phases of physical fitness exercises as shown to the class and visual aids.

Guided Discovery

The teachers disclose a high level of application with overall mean score of 3.61. However, they often determine the body improvement of students in performing selected physical activity with a mean score of 3.69 or high level. They often identify important aspects of physical fitness with a mean score of 3.64 or high. They often design a sequence of movements that incorporate good fitness exercises with a mean score of 3.61 or high level. Moreover, the teachers often decide the

skill needed the most work out and must develop a practice drill with a mean score of 3.57 or high. They often allow the students to practice different physical activity with a mean score of 3.55 or high.

The level of application of teaching approaches of teachers in physical fitness in terms of guided discovery is high. This means that the teachers often determine the body improvement of students in performing selected physical activity; identify important aspects of physical fitness; design a sequence of movements that incorporate good fitness exercises; decide the skill needed the most work out; and must develop a practice drill and allow the students to practice different physical activity. The level of involvement of the learner varies with the level of cognitive response. The teacher knows the answer to the problem but leads the learner to discover the answer for him or herself. The process of learning is as important as what to be learned. Students are more likely to be engaged at a higher level with the content when their role in the learning process is more extensive. Cognitive strategies allow the content to be individualized.

Peer Teaching

Presented in Table 3 is the level of application of teaching approaches of teachers in physical fitness in terms of peer teaching. The teachers reveal a moderate level of application with an overall mean score of 3.46. However, they often teach a complex physical movement to a large group of students with a mean score of 3.58 or high level. The teachers often allow the leader of the group to teach a part of physical activity to the whole class with a mean score of 3.52 or high level. They often appoint several students who have mastered the physical exercises to perform in their respective group with a mean score of 3.51 or high level. The teachers sometimes select two or more students of the group to teach the proper execution of exercises to the class with a mean score of 3.39 or moderate level. They sometimes create a movement in which several components of fitness must be performed with a mean score of 3.30 or moderate level.

The level of application of teaching approaches of teachers in physical fitness in terms of peer teaching is moderate. This

Table 3: Summary on the level of application of teaching approaches of teachers in physical fitness

Indicator	Mean	Descriptive Level
Direct Instruction	3.90	High
Task Teaching	3.76	High
Cooperative Learning	3.54	High
Guided Discovery	3.61	High
Peer Teaching	3.46	Moderate
Student-Designed Instruction	2.81	Moderate
Overall	3.51	High

means that they often teach a complex physical movement to a large group of students; allow the leader of the group to teach a part of physical activity to the whole class; and appoint several students who have mastered the physical exercises to perform in their respective group. However, they sometimes select two or more students of the group to teach the proper execution of exercises to the class and create a movement in which several components of fitness must be performed. The content to be taught is viewed not from one's own perspective but from that of someone whose conceptions of the topic to be taught are less satisfactory.

Student-Designed Instruction

The teachers disclose moderate level of application with a mean score of 2.81. However, they sometimes evaluate the students' performance in each skill acquired with a mean score of 3.31 or moderate. The teachers sometimes develop an individual program in physical fitness with a mean score of 3.02 or moderate level. The teachers sometimes select area of concentration for physical fitness activity with a mean score of 2.90 or moderate level. Moreover, they sometimes communicate with a large visual poster depicting difficult phases of the skill with a mean score of 2.63 or moderate level. They seldom set up several kinds of media like video tapes as visual aids with a mean score of 2.20 or low.

The level of application of teaching approaches of teachers in physical fitness in terms of student-designed instruction is moderate. This means that they sometimes evaluate the students' performance in each skill acquired; develop an individual program in physical fitness; select area of concentration for physical fitness activity; and communicate with a large visual poster depicting difficult phases of the skill. They seldom set up several kinds of media like video tapes as visual aid. To function productively with a child designed approach, children need to be highly motivated, be self-directed, and have the skills to work independently. Child-designed strategies work well after the basic skill has been learned. They are especially useful with dynamic situations, when children are at different skill levels, and as culminating activities.

CONCLUSIONS

The findings of this study conclude that the level of application of teaching approaches of teachers in physical fitness is high, there was a significant difference in the evaluation of students on the level of application of teaching approaches of teachers in physical fitness when they are grouped by gender and age.

An enhancement program plan for physical education teacher's competencies has been developed to improve the teaching approaches of University of Southern Mindanao Kabacan, North Cotabato. The enhancement program for the teachers of physical education in USM stressed only on the items of

indicator with a mean rating of 3.46 described as moderate, hence it is the lowest rating result of study. It is aimed, therefore, that this enhancement program will uplift the result to high or very high of the teaching approaches in physical fitness.

The program is composed of six indicators of teaching approaches namely: Direct instruction, task teaching, guided discovery, peer teaching, cooperative learning and child-designed instruction. These indicators are further subdivided into key result areas that were selected based on the result of the study their ratings that were below 3.5. This corresponding approaches and success indicators are clearly specified in the said data.

Evaluation for each result area shall be done at the end of the school year based on their objectives in comparison with indicator. However, monitoring shall be done periodically once the program is implemented until it is finished. Monitoring of the result areas should be done to make adjustments in terms of teaching strategies or approaches whenever performance is not directed towards the attainment of their objectives

RECOMMENDATIONS

Based on the findings, summary, and conclusion of this research, the following are hereby recommended:

1. The school administrator may plan, formulate programs, and conduct trainings or series of workshops for physical education teachers to enhance their knowledge in the use of appropriate approaches, in teaching
2. The teachers should improve to enhance their teaching approaches that would alleviate the performance of the students physically, mentally, emotionally, and spiritually
3. The students should be aware on the essence of physical fitness as it affects their total growth and development
4. The action plan proposed by the researcher may be adopted for the enhancement of teaching physical education.

REFERENCES

1. Andin C. Teaching Physical Education in Philippine Schools. Manila: Phoenix Publishing House, Inc.; 1988.
2. Aparis CC. Teaching Performance of Instructors and Physical Fitness of the Students in Special Education 1V. Unpublished Master's Thesis. Bolton, Davao: University of Mindanao; 2002.
3. Batingal CS. Critical Thinking and Mathematical Skills among Fourth Year Students in Tugbok District Public High School. Unpublished Master's Thesis. Bolton Davao, Philippines: University of Mindanao; 2004.
4. Barrow H. Practical Approach to Measurement in Physical Education. Philadelphia, PA: W.B Saunders, Co.; 1972.
5. Biggs J. Teaching for Quality Learning at University: What the Student Does. 2nd ed. New York: McGraw Hill House; 2003.
6. Blakemore C, Harrison J. Instructional Strategies for Secondary School Physical Education. Dubuque, Iowa: Wm. C. Brown Publishers; 1989.
7. Borrow H. Principles of Physical Education. United States of America: Prentice Hall Inc.; 1988.
8. Boyle T, Margettes S. The Core Guided Discovery Approach Toacquiring Programming Skills; 2000. Available from: <http://www.edutechwiki.uniquelch.com> [Last accessed on 2010 Mar 30].
9. Bucher C. Management of Physical Education and Athlete Program. 9th ed. Toronto: Times Mirror/Mosby College Publishing; 1987.
10. Bucher C, Krotee M. Management of Physical Education and Sport. 12th ed. New York: McGraw Hill; 2002.
11. Byra M. Applying a task progression to reciprocal style of teaching. J Phys Educ Recreat Dance 2004;75:42-6.
12. Cole KN, Direct Instruction; 1993. Available from: <http://www.edutechwiki.uniquelch.com> [Last accessed on 2010 Apr 01].
13. Corbin C, Welk G. Concepts of Physical Fitness Active Life Styles for Wellness. New York: McGraw Hill; 2004.
14. Daughtrey. Effective teaching in physical education for secondary school. Philadelphia PA: W.B Saunders, Co.; 1973.
15. Gabbard C. Lifelong Motor Development. 2nd ed. United States: McGraw Hill, Inc.; 1992.
16. Galvan J, Fukuda Y. Asian international students' preferences for learning in American Universities. GATESOL J 1997.
17. Glickman C, Gordon S, Ross J. The Basic Guide to Supervision and Instructional Leadership. 2nd ed. London, United Kingdom: Pearson; 2009.
18. Graham G, Holt Hale S, Parker G. Children Moving: A Reflective Approach to Teaching Physical Education. 5th ed. United States: Mountain View Elementary School; 2001.
19. Harrison J, Blakemore C. Instructional Strategies for Secondary School Physical Education. 2nd ed. Dubuque, Iowa: W. M. C Brown Publisher; 1989.
20. Jordan P. The Fitness Instinct: The Revolutionary New Approach to Healthy Exercise that is fun, Natural and no Sweat. United States: Rodale Books; 1999.
21. Lardizabal A. Principles and Methods of Teaching. Manila: Phoenix Publishing House Inc.; 1991.
22. Pendidikan F. Health Related Fitness Curriculum Outlook and Implementation Problems; 1998. Available from: <https://www.fskm.um.edu.my/5148/1/2> [Last accessed on 2009 Oct 09].
23. Voltmer E, Esslinger A. The Organization and Administration of Physical Education. 5th ed. United States of America: Prentice Hall Inc.; 1979.
24. Wiggins G, Tighe J. Understanding by Design. Alexandria, VA: Association for Supervision and Curriculum Development; 1998.



Research Article

Aeropel exercise program: Its effect towards dysmenorrhea pain level

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ABSTRACT

Aeropel exercise is designed for dysmenorrhea patients. It is a combination of cardio and floor exercises. “Aero” means air which is believed that cardiorespiratory exercises are the most effective form of exercise that alleviates the pain cause by dysmenorrhea, and “pel” stands for pelvis, this are exercises that stretches and affects the abdomen, hips, lower back, and thighs; it is accompanied with music to make it lively and spontaneous. A quasi-experimental type of research was used to find out the effectiveness of aeropel exercise program to alleviate dysmenorrhea pain level. The premenstrual pain level among the respondents for the 1st month with a mean descriptive level of pain was “Mild”, after performing aeropel exercise for 3 months the descriptive pain level of the respondents was already in “No Pain” this means that the exercise protocol of “Aeropel” was effective in alleviating the pain felt during menstruation. Moreover, the difference between premenstrual pain level and postmenstrual pain level is significantly strong. This is indicated by the Pearson $r = 0.808$ and $P = 0.000$ which far lesser than the expected significance level of 0.05.

Keywords: Aeropel exercise, Dysmenorrhea, Dysmenorrhea pain level, Exercise

INTRODUCTION

One in every two women who have their period with an estimation of 60–93% of adolescents suffers from dysmenorrhea. It is one of the most common gynecologic disorders and believed to be the greatest single cause of lost work and school days among young women (Sharma *et al.* 2008). It is said that a women who suffers dysmenorrhea misses and performs low in class. Therefore, preventing the pain is the best solution.

This study seeks to know the effectiveness of aeropel exercise intervention program and its effect to the dysmenorrhea pain level among the respondents. Several evidence-based treatments are available for dysmenorrhea. Exercise is one of the best remedial measures to overcome this pain. It helps by stretching the lower back muscles and maintaining good

abdominal muscle tone. Women with dysmenorrhea have contracted ligament bands in the abdomen and series of exercise could have a high rate of symptom relief for about 41% (Daley 2009).

This study provides a wide array of determining the effectiveness of the aeropel exercise intervention program as basis of encouraging women who suffer dysmenorrhea to take the intervention program. This study will help young women with dysmenorrhea cases to alleviate the pain intensity felt during ones period – dysmenorrhea, to make them feel better, comfortable and can function normally during their menstrual period every month through constant participation in the aeropel exercise program. Through this research, it will provide information and better understanding on the effectiveness of aeropel exercise program to women in relieving the pain during their menstruation. Furthermore, this study contributed knowledge and additional information for PE teachers, women who suffer dysmenorrhea, and fitness instructor to promote exercise and fitness literacy as the best medicine in many types of diseases particularly dysmenorrhea.

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METHODOLOGY

Study Design

Before the conduct of the study, ethics approval to conduct the intervention program for the students was applied. The research design used in this study is a quasi-experimental type which aims to find out the effectiveness of aeropel exercise program in relation to dysmenorrhea pain level.

Sampling Procedures

All female PE 2 and PE 4 students from the different departments of Capitol niversity, Philippines with a total population of 476 were given a pre-assessment questionnaire for them to fill in. The researcher, then, collected the questionnaire to identify the students with dysmenorrhea cases; on the result of the pre-assessment, there were only 137 students who have dysmenorrhea cases with a 28.9% from the total population.

Instruments

Two sets of questionnaire and a personally designed exercise program – aeropel exercise were utilized. (1) A self-made pre-assessment questionnaire which undergoes a pilot testing to identify the students with dysmenorrhea cases, (2) a dysmenorrhea period pain tracker from the Boston Children’s Hospital retrieved from http://www.youngwomenshealth.org/painful_periods.html to measure the pain intensity level among the respondents. Finally, the aeropel exercise program that was personally made by the researcher which was applied during the conduct of the study.

Data Analysis

The data were gathered, tabulated, tallied, and treated using this statistical tool. Pearson correlation coefficient was utilized in revealing the relationship between the pre-menstrual level of pain and postmenstrual level of pain of the respondents.

RESULTS AND DISCUSSION

The data obtained were statistically treated and correspondingly interpreted to give meaning to the findings disclosed in this study.

Table 1 shows that two groups of the respondents of JP1 (January premenstrual pain– 1) and JP2 (January premenstrual pain – 2) have a moderate level of pain, but the two groups of JP4 (January premenstrual pain – 4) and (January premenstrual pain – 5) have no pain felt during their menstrual cycle for the month of January, and only the JP3 (January premenstrual pain– 3) group has a mild level of pain. Therefore, for the month of January, where the exercise protocol of “Aeropel Exercise” was not yet implemented to the respondents, the level of pain of the respondents with the mean of means of 2.6029 with a description of “mild level of pain.”

Table 2 shows the descriptive data on the level of pain felt during their menstruation among the respondents after 3 months implementation of aeropel exercise. Groups MP1 and MP2 (March post – 1 and 2) have a mild level of pain, and groups MP3, MP4, and MP5 (March post – 3, 4, and 5) have no pain felt. With the mean of means of 1.3168 with a description of “no pain” was felt for the month of March.

The results show that even in 3 months’ time of the implementation of the exercise protocol “Aeropel exercise” was effective among the respondents and was proven helpful according to the result of the data in alleviating the pain felt during menstruation. This shows that it has proven the study of Amrisha 2007, that exercise increases the endorphins and serotonin (natural painkillers), and that exercise during menstruation can get rid of menstrual pain, is factual and applicable in this study.

Data reveals in Table 3 that correlation between premenstrual pain level and postmenstrual pain level is significantly strong altogether particularly during the month of January. This is indicated by the Pearson $r = 0.808$ and $P = 0.000$ which far lesser than the expected significance level of 0.05.

Table 1: Mean values and description of premenstrual level of pain for the month of January

Pre data on January	Mean	Description
JP1	5.8321	Moderate
JP2	4.5036	Moderate
JP3	2.5109	Mild
JP4	0.1387	No pain
JP5	0.0292	No pain
Mean	2.6029	Mild

Table 2: Mean values and description of premenstrual level of pain for the month of March

Post data on March	Mean	Description
MP1	3.6642	Mild
MP2	2.2336	Mild
MP3	0.4599	No pain
MP4	0.1898	No pain
MP5	0.0370	No pain
Mean	1.3168	No pain

Table 3: Pearson correlation coefficients and significance of correlation between premenstrual data and postmenstrual data

	R	P value	Interpretation	Decision on Ho
PRE-JAN	0.866	0.000	Significant	Reject
POST-MAR	0.604	0.000	Significant	Reject
Mean	0.808	0.000	Significant	Reject

This is to support the study of De Arajo *et al.* (2013) that Pilates as physical activity practice has provided improvement in symptoms associated to primary dysmenorrhea, positively interfering with decreasing pain, and representing a promising non-pharmacological alternative. Another form of exercise that proves to decrease the pain felt during menstruation even without taking any medicines.

CONCLUSIONS

The findings of the study reveal that the aeropel exercise is an effective way to lessen the intensity pain level felt during menstruation. The beneficial effect of exercise played a big role in decreasing the pain level among the respondents; thus, participation to the exercise protocol also played a part.

The statistical result of testing the effect of aeropel exercise between the premenstrual and postmenstrual pain level shows a significant difference.

However, the result of the study generally reflects a positive note in alleviating the pain felt during menstruation with dysmenorrhea cases. The result also leaves too much to be desired and done. With a very short-time frame in implementing the aeropel exercise in 3 months the result is more likely to be little, if it should be done for more than 6 months or a year, it will have a probability that the pain will surely be treated. Although majority of the respondents attended, the aeropel exercise program still many of them did not attend religiously resulting to a minimal change with regard to the pain level.

Recommendations

The researcher makes the following recommendations and suggestions with the hope that all women who suffers dysmenorrhea be knowledgeable that the best medicine in many types of diseases particularly dysmenorrhea is exercise.

1. That there should be an awareness program to schools especially the PE teachers to spread and implement the aeropel exercise to women who suffers dysmenorrhea.

2. That the community must promote any type of exercise activities for a healthier and happier life.
3. That an advocacy program be implemented for at least 3 times a week of engaging in aeropel exercise among women with dysmenorrhea.
4. All the programs listed above must be included both private and public sectors as well the community for the improvement of health so that it will be helpful to those patient/individual with dysmenorrhea.
5. The researcher further recommends that the PE teachers will include the aeropel exercise as part of their class so that their students with or without dysmenorrhea be engaged in exercise.

REFERENCES

1. Abbaspur Z. The effect of exercise on primary dysmenorrhea. *J Res Health Sci* 2011;4:482.
2. Amrisha. Benefits of Exercise; 2007. Available from: <http://www.boldsky.com/health/diet-fitness/2011/reduce-menstrual-cramps-exercises-270911.html> [Last accessed on 2014 Mar 12].
3. Castano P. Exercise for Menstrual Cramps, *WebMD the Magazine*. 2008. Available form: <https://www.Webmd.com/women/features/exercise-eases-menstrual-cramps>
4. Dysmenorrhea Pain Tracker. Center for Young Women's Health. *Period Pain Tracker*; 2010. Available from: http://www.youngwomenshealth.org/painful_periods.html
5. Daley A. The role of exercise in the treatment of menstrual disorder: The evidence. *Br J Gen Pract* 2009;59:561.
6. De Arajo LM, *et al.* A Longitudinal Characteristic and Quantitative Approach on Pain Improvement in Women with Primary Dysmenorrhea Treated with Pilates; 2013. Available from: <http://www.scielo.br/pdf/rdor/v13n2/en.04.pdf> [Last accessed on 2015 Apr 12].
7. Haidari F, Akrami A, Sarhadi M, Shahi MM. Prevalence and severity of primary dysmenorrhea and its relation to anthropometric parameters. *HAYAT* 2011;17:85. Available from: <http://www.connection.ebscohost.com/c/articles/66643766/prevalence-severity-primary-dysmenorrhea-relation-anthropometric-parameters> [Last accessed on 2014 Feb 06].
8. Sharma P, Malhotra C, Taneja DK, Saha R. Problems related to menstruation amongst adolescent girls. *Indian J Pediatr* 2008;75:125-9.



Research Article

Android-based coursepack in Sepaktakraw for students, athletes, and coaches

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ABSTRACT

This study proposes an android-based coursepack in Sepaktakraw for students, teachers, and coaches anchored in the Analyze, Design, Development, Implement, and Evaluate (ADDIE) Instructional Design method by Dr. Serhat Kurt in 2018. It utilized a descriptive research design using researcher-made survey questionnaires to evaluate the application. The respondents were 20 or (26.67%) University of Makati (UMAK) students; 20 or (26.67%) were UMAK Athletes; another 20 or (26.67%) were a group of non-Makati PE students; then, ten or (13.32%) were UMAK coaches, and five or (6.67%) were information technology experts. Total weighted mean (WM) from five groups of respondents was as follows: For the UMAK, CHK-BPW students had an overall evaluation of the project WM = 4.81, for the UMAK athletes with WM = 4.81, for the non-UMAK PE students with WM = 4.65, for the UMAK coaches with WM = 4.80, and the information technology experts with WM = 4.90 that resulted to an overall WM of 4.77 which gave a “Highly Acceptable” evaluation. Conclusively, the application is a reliable teaching material that will support the accessibility of the students, athletes, and coaches to learning and skill development.

Keywords: Android-based applications, Fundamental skills and ADDIE instructional design, Information communication technology, Sepaktakraw

INTRODUCTION

Sepaktakraw is a well-known Asian Sport around the world. It requires complex movements by kicking the rattan ball (Hasanuddin *et al.*, 2015). Hence, repetitive practice and execution achieve the skills (Candia *et al.*, 2021). In the Philippines, Sepaktakraw integrates into Physical Education (PE) Curriculum (Commission on Higher Education [CHED], 2017). Consequently, mobile game-based learning is a growing field of interest (Chang and Hwang, 2019). This study aims to create an android-based coursepack in Sepaktakraw.

Sepak Raga is an ancient game played in Malay states and other neighboring countries of Singapore and Brunei. *Sepak*

is Malay for kick, and *Raga* is the rattan ball used in the game, which involves players standing in a circle keeping the *Raga* in the air for as long as possible without using their hands. Athletes also play the sport in Southeast Asian countries. The sport has various names such as Takraw in Thailand, *Sipa* in the Philippines, *Ching Loong* in Myanmar, *Rago* in Indonesia, and *Kator* in Laos. As technology is developing, PE and sports are also making innovations to provide the needs of the 21st-century learners, athletes, and coaches. Hence, the integration of online learning information communication technology creates new pedagogy for the teaching and learning process as part of the educational paradigm shift (Singh and Thurman, 2019). Hence, the 21st-century teachers must embark on change by providing learners with new opportunities to learn. With that, educational technology reinforces situated learning and social constructivism (Ford and Lott, 2009). Such theory connotes that learners’ interests and motivation develop through their own experiences (Bada and Olusegun, 2015). The situated learning theory suggests using educational technology to provide long experiences in virtual environments

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(Bell *et al.*, 2013). It performs better in conditions that require situational approaches like the ongoing Coronavirus Disease 2019 pandemic that placed the educational institutions into remote learning. In connection to the above-mentioned, Android Apps or Mobile Learning is a new stage of e-learning that can learn everywhere at every time through the use of mobile and portable devices (Karoui *et al.*, 2017; Conejar *et al.*, 2015). Some early definitions of m-learning refer to e-learning using mobile technology or a new form of electronic learning (Borba *et al.*, 2016; Traxler and Kukulska-Hulme, 2015; and Franklin and Smith, 2015). Early predictions of the evolution of mobile learning hypothesized that mobile learning would have a short-lived separate identity before eventually blending into general e-learning (Traxler, 2009). The latest report of Digital 2020: Global Digital Overview indicates that the world has 5.19 billion unique mobile phone users. It includes 173.2 million mobile phone connections in the Philippines (Kemp, 2020). It implies that students, teachers, and coaches, nowadays, are versatile and equipped with mobile devices.

With the various works of the literature review, there is no existing android-based coursepack for Sepaktakraw sports in a global and local setting. Besides, most of the works of literature focus only on various intangible behaviors. None of these works of the literature correlates the result of skills enhancement in Sepaktakraw using android applications. It limits the opportunity of students, teachers, and coaches in Sepaktakraw sports to provide knowledge and skills enhancement. The problems identified are the feedback of students, PE teachers, and coaches in terms of functionality, as to sustainability, accuracy, security, and composite. Second, the reliability of the coursepack as to recoverability and security. Third, the usability of the coursepack as to understandability, learnability, and operability. Fourth, the efficiency of the coursepack as to recoverability and security. And finally, the portability of the coursepack as to adaptability and installation. The results and findings of this study will provide enhancement to the android-based coursepack in Sepaktakraw sports for students, PE teachers, and coaches.

This study seeks to modernize the teaching methods of Sepaktakraw's terminologies, basic information, fundamental skills, and knowledge test by creating an android-based coursepack. The android-based coursepack will render learning the fundamentals of the sport in a convenient and accessible means. It will also help the College of Human Kinetics (CHK) – Bachelor of PE and Wellness (BPW) majors, athletes, and coaches to realize the usability of technology in education, instructional delivery, sports, and skills enhancements. It will also benefit the Department of Education, CHED, and Philippine Sports Commission to provide innovative resource materials for the fundamental skills, engagements, and performance enhancement in playing Sepaktakraw sports.

CONCEPTUAL FRAMEWORK

This study proposes an android-based coursepack in teaching Sepaktakraw for students, teachers, and coaches where the Analyze, Design, Development, Implement, and Evaluate (ADDIE) Instructional Design (ID) method by Dr. Kurt (2018) mainly supports this study.

The ADDIE method as ID serves as a guide in designing and effectively tracking a project's progress. This sequence, however, does not impose a strictly linear progression between each step because each stage has explicit instruction on its own. It means that even if the individual applies ADDIE at the middle of the project, it will still retain its value and provide a sense of structure to the whole program. Educators find this approach very useful with stages clearly defined that make the implementation of instructions effective. As an ID, ADDIE Model has found wide acceptance and use. The analysis phase serves as the "Goal-Setting Stage." The focus of the designer in the analysis phase is on the target audience. It is also here that the program matches the level of skill and intelligence each student or participant shows to make sure that what they already know would not be duplicated and instead focus the learning on topics and lessons. In this phase, instructors distinguish between what students already know and what they have to know after completing the course. The utilization of several substantial components validates the analysis. Course texts and documents, syllabi, and the internet are to be employed. With the help of online materials such as web courses, the structure serves as the primary guide for the syllabus. At the end of the program, the instructional analysis determines what subjects or topics to be embedded.

The design stage determines all goals, tools utilization gauge performance, various tests, body, subject matter analysis, planning, and resources. It is where all approaches are made and planned while following an explicit set of rules. This systematic approach makes sure everything falls within a rational and planned strategy or set of methods that have an ultimate goal of reaching the study's targets. Completing the details on each step of the way is crucial to the success of the design stage. Moreover, the design phase focuses on the learning objectives, content, subject matter analysis, exercise, lesson planning, assessment instruments used, and media selection. The design phase needs to be specific. The execution of each element of the ID plan obliges attention to detail is significant. It should be systematic with comprehensive learning stages, development, and evaluation of planned strategies attaining the study's goals.

The development stage starts the production and testing of the methodology being used in the project. In this stage, designers make use of the data collected from the two previous stages and use this information to create a program that will relay what

needs to be taught to participants. If the two previous stages required planning and brainstorming, the development stage is all about putting it into action. This phase includes three tasks, namely, drafting, production, and evaluation. Development, thus, involves creating and testing of learning outcomes.

The implementation stage reflects the continuity of modifying the program to maximize efficiency with positive results. Here is where IDs strive to redesign, update, and edit the course to be delivered effectively. The procedure is the keyword here. The hands-on and collaborative activities among students using the ADDIE method as ID serve as the basis of evaluation for further enhancement of the study. No project should run its course by itself and in the absence of appropriate assessments from the IDs. Since this stage gains much feedback from IDs and participants alike, much can be learned from and addressed.

The last stage of the ADDIE method is the evaluation. In this part, meticulous final testing in terms of the purpose, relevance, rationale, and time in this study. The things to assess are the accomplishment (or were not accomplished) of the entire project. This phase has two parts: Formative and summative assessments. The initial evaluation happens during the development stage. This formative phase happens while students and IDs are conducting, while the summative portion occurs at the end of the program. The goal of the evaluation stage is to determine what will be required moving forward to further the efficiency and success rate of the project.

Every stage of the ADDIE process involves formative evaluation. It is multidimensional and an essential component of the ADDIE process. It assumes the form of formative assessment in the development phase. Evaluation is throughout the implementation phase with the aid of the instructor and the students. After the implementation, there is a summative assessment for instructional improvement. The designer should ascertain if the problem relevant to the training program is solved throughout the evaluation phase to attain the desired objectives.

DESIGN AND METHODOLOGY

This study utilized a descriptive research design using researcher-made survey questionnaires to evaluate the android-based coursepack in Sepaktakraw. It uses a descriptive five-point scale for evaluation and assessment. Using the Likert Scale Principle, each criterion has a scale of 1–5, where five is highly acceptable, and one is not acceptable. 75 random respondents from the University of Makati (UMAK) in Metro Manila participated in this study. The respondents are 20 UMAK BPW-CHK students, 20 UMAK Athletes, ten UMAK coaches, five Information Technology (IT) experts, and 20 regular students from other courses.

The study was patterned after the ADDIE model by Dr. Kurt (2018). The concept of ID can be traced back to as early as the 1950s. However, it was only in the mid-1970s that ADDIE was designed and developed for the U.S Army and was implemented across all U.S Armed Forces (Molenda, 2015). It represents a descriptive guideline for building training and performance support tools in five phases of the study: Analysis, Design, Development, Implementation, and Evaluation of the software. The model will include the analysis of the available materials, their limitations, problems, or deficiencies. The illustration below shows the flow of this model.

The study went through two phases. The first phase is the development of the instructional material. Hence, the video links to YouTube. The second phase develops the same material into digital form, specifically for android phone applications with the aid of a programmer. The project is a software application for android smartphones and tablets which only requires small memory and downloads from the Google play store application through a link. After downloading the application, saved, and installed in the smartphone, it is possible to transfer or share it to other phones or tablets through Bluetooth or Share-It application of gadgets having the same features. However, the software has its limitations in accessing the instructional video due to the higher memory required by the program that the android capacity of the phone or tablet cannot handle. The availability of a wi-fi or internet connection allows the viewing of the video. This video is available for free to all types of learners to promote inclusive PE. The assessment of the final output uses the standards of “ISO 9126”, an international evaluation standard for software (Djouab and Bari, 2016). The software has four parts that address the following subjects: quality model, external metrics, internal metrics, and quality in use metrics to achieve the standard. Specifically, the final output shall use an assessment survey questionnaire in the following categories: Functionality, reliability, usability, efficiency, and portability.

RESULTS AND DISCUSSION

Statistical analyses of data, corresponding interpretation, and discussion of findings based on the conceptual framework that became the basis of this project are presented below. The tables present the feedback of students, PE teachers, and coaches in terms of functionality, reliability, usability, efficiency, and portability of the android-based coursepack in the sport of Sepaktakraw.

Table 1 shows that out of 75 respondents in the study, there were 20 or (26.67%) UMAK students; 20 or (26.67%) were UMAK athletes; 20 or (26.67%) were a group of non-Makati PE students; ten or (13.32%) were UMAK coaches, and five or (6.67%) were IT experts.

Table 1: Frequency and percentage distribution of respondents

Respondents	N	Percentage
UMAK BPW-CHK students	20	26.67
UMAK athletes	20	26.67
Non-Makati P.E. students	20	26.67
UMAK coaches	10	13.32
Information technology experts	5	6.67
Total	75	100

Table 2 shows the overall evaluation of UMAK-CHK-BPW, non-UMAK P.E., UMAK athletes, coaches, and IT expert-respondents relating to functionality of the android-based module in Sepaktakraw yielded composite mean scores of 4.86, 4.47, 4.68, 4.83, and 5 accordingly. All respondents agreed that the android-based module application has sustainability that fits the user’s needs. Accuracy displays the correctness of the result and security that prevents unauthorized access to the program.

Table 3 shows the overall evaluation of UMAK-CHK-BPW, non-UMAK PE, UMAK athletes, coaches, and IT expert-respondents relating to reliability of the android-based module in Sepaktakraw yielded composite mean scores of 4.65, 4.52, 4.65, 4.9, and 5 accordingly. All respondents agree to the android-based module application recoverability. It will bring the failed system to complete operation. Hence, fault tolerance can withstand or recover from failure during navigation.

Table 4 shows the overall evaluation of UMAK-CHK-BPW, non-UMAK PE, UMAK athletes, coaches, and IT expert-respondents relating to usability of the android-based module in Sepaktakraw yielded composite mean scores of 4.91, 4.93, 4.73, 4.86, and 5 accordingly. All of the respondents agree that the android-based module application has the understandability that helps the user know the meaning of the words and language of the program. Hence, learnability gives learning effort from different users. The efficiency of operating the software is possible at any place at any time.

Table 5 shows the overall evaluation of UMAK-CHK-BPW, non-UMAK PE, UMAK athletes, coaches, and it expert-respondents relating to efficiency of the android-based module in Sepaktakraw yielded composite mean scores of 4.67, 4.82, 4.75, 4.67, and 5 accordingly. All of the respondents agree that the android-based module application has the capacity for its time behavior which allows the program to have a response time. Meeting the resource behavior of the program based on the hardware requirement of the application was successfully obtained.

Table 6 shows the overall evaluation of UMAK-CHK-BPW, non-UMAK PE, UMAK athletes, coaches, and it

Table 2: Evaluation on the functionality of the android-based module in Sepaktakraw

Indicator	UMAK BPW		Non UMAK P.E.		UMAK Athlete		UMAK Coaches		I.T. Experts	
	Verbal Interpretation	X	Verbal Interpretation	X	Verbal Interpretation	X	Verbal Interpretation	X	Verbal Interpretation	X
Sustainability	Highly Acceptable	4.95	Highly Acceptable	4.8	Highly Acceptable	4.65	Highly Acceptable	4.9	Highly Acceptable	5
Accuracy	Highly Acceptable	4.9	Highly Acceptable	4.4	Highly Acceptable	4.8	Highly Acceptable	4.8	Highly Acceptable	5
Security	Highly Acceptable	4.75	Highly Acceptable	4.2	Highly Acceptable	4.6	Highly Acceptable	4.8	Highly Acceptable	5
Composite	Highly Acceptable	4.86	Highly Acceptable	4.47	Highly Acceptable	4.68	Highly Acceptable	4.83	Highly Acceptable	5

Table 3: Evaluation on the reliability of the android-based coursepack in Sepaktakraw

Indicator	UMAK		Non		UMAK		UMAK		I.T.	
	BPW	Verbal Interpretation	UMAK P.E.	Verbal Interpretation	Athlete	Verbal Interpretation	Coaches	Verbal Interpretation	Experts	Verbal Interpretation
Reliability	X	X	x	x	X	X	X	X	x	x
Recoverability	4.60	Highly Acceptable	4.45	Highly Acceptable	4.75	Highly Acceptable	4.9	Highly Acceptable	5	Highly Acceptable
Security	4.70	Highly Acceptable	4.6	Highly Acceptable	4.55	Highly Acceptable	4.9	Highly Acceptable	5	Highly Acceptable
Total	4.65	Highly Acceptable	4.52	Highly Acceptable	4.65	Highly Acceptable	4.9	Highly Acceptable	5	Highly Acceptable

Table 4: Evaluation on the usability of the android-based coursepack in Sepaktakraw

Indicator	UMAK		Non		UMAK		UMAK		I.T.	
	BPW	Verbal Interpretation	UMAK P.E.	Verbal Interpretation	Athlete	Verbal Interpretation	Coaches	Verbal Interpretation	Experts	Verbal Interpretation
Usability	X	X	x	x	X	X	X	X	x	x
Understandability	5.0	Highly Acceptable	5.0	Highly Acceptable	4.75	Highly Acceptable	4.9	Highly Acceptable	5	Highly Acceptable
Learnability	5.0	Highly Acceptable	4.9	Highly Acceptable	4.80	Highly Acceptable	5.0	Highly Acceptable	5	Highly Acceptable
Operability	4.75	Highly Acceptable	4.9	Highly Acceptable	4.65	Highly Acceptable	4.70	Highly Acceptable	5	Highly Acceptable
Total	4.91	Highly Acceptable	4.93	Highly Acceptable	4.73	Highly Acceptable	4.86	Highly Acceptable	5	Highly Acceptable

Table 5: Evaluation on the efficiency of the android-based coursepack in Sepaktakraw

Indicator	UMAK BPW		Non UMAK P.E.		UMAK Athlete		UMAK Coaches		IT Experts	
	Verbal Interpretation	Verbal Interpretation	Verbal Interpretation	Verbal Interpretation	Athlete	Verbal Interpretation	Coaches	Verbal Interpretation	IT Experts	Verbal Interpretation
Efficiency	X	X	X	X	X	X	X	X	X	X
Recoverability	4.75	Highly Acceptable	4.85	Highly Acceptable	4.80	Highly Acceptable	4.60	Highly Acceptable	5	Highly Acceptable
Security	4.6	Highly Acceptable	4.8	Highly Acceptable	4.70	Highly Acceptable	4.60	Highly Acceptable	5	Highly Acceptable
Total	4.67	Highly Acceptable	4.82	Highly Acceptable	4.75	Highly Acceptable	4.67	Highly Acceptable	5	Highly Acceptable

Table 6: Evaluation on the portability of android-based coursepack in Sepaktakraw

Indicator	UMAK BPW		Non UMAK P.E.		UMAK Athlete		UMAK Coaches		IT Experts	
	Verbal Interpretation	Verbal Interpretation	Verbal Interpretation	Verbal Interpretation	Athlete	Verbal Interpretation	Coaches	Verbal Interpretation	IT Experts	Verbal Interpretation
Efficiency	X	X	X	X	X	X	X	X	X	X
Adaptability	4.9	Highly Acceptable	4.75	Highly Acceptable	4.70	Highly Acceptable	5.0	Highly Acceptable	5	Highly Acceptable
Installation	4.95	Highly Acceptable	4.67	Highly Acceptable	4.85	Highly Acceptable	4.80	Highly Acceptable	5	Highly Acceptable
Total	4.92	Highly Acceptable	4.71	Highly Acceptable	4.77	Highly Acceptable	4.90	Highly Acceptable	4.5	Highly Acceptable

Table 7: Summary evaluation of the android-based module as perceived by the 75 respondents

Respondents	Functionality	Reliability	Usability	Efficiency	Portability	Verbal Interpretation
UMAK-BPW-CHK	4.86	4.65	4.78	4.82	4.92	Highly Acceptable
UMAK Athletes	4.83	4.85	4.86	4.60	4.90	Highly Acceptable
Non-UMAK P.E.	4.47	4.52	4.76	4.82	4.71	Highly Acceptable
UMAK coaches	4.83	4.85	4.86	4.60	4.90	Highly Acceptable
IT experts	5	5	5	5	4.5	Highly Acceptable
Overall WM	4.73	4.71	4.83	4.81	4.75	Highly Acceptable

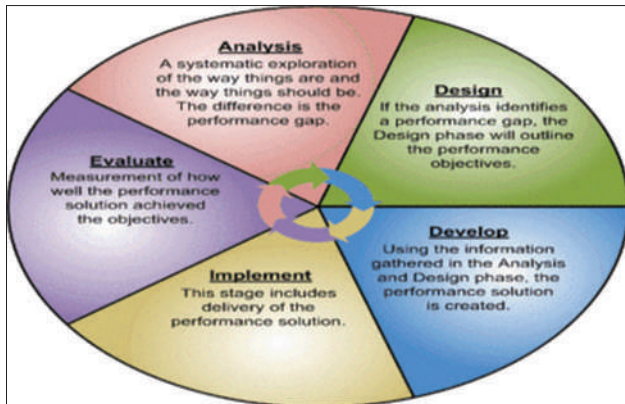


Figure 1: The Addie model for android-based module for Sepaktakraw

expert-respondents relating to efficiency of the android-based module in Sepaktakraw yielded composite mean scores of 4.67, 4.92, 4.71, 4.77, and 4.9 accordingly. All of the respondents agree the android-based module application has the capacity for its adaptability that allows the program to change to new specifications or operating environments; the installation ability of the program eases the installation and sharing from one user to another.

Table 7 shows the total weighted mean (WM) from five groups of respondents were as follows: For the UMAK CHK-BPW students had an overall evaluation of the project WM = 4.81; for the UMAK athletes with WM = 4.81; for the non-UMAK PE students with WM = 4.65; for the UMAK with WM = 4.80; and the IT experts with WM = 4.90 that resulted to an overall WM of 4.77 which gave a “Highly Acceptable” evaluation of the android-based module in Sepaktakraw.

CONCLUSION

This study proposes an android-based coursepack in teaching Sepaktakraw for students, teachers, and coaches. It anchors in the ADDIE ID method by Dr. Kurt in 2018. The operation of the software gave the users comfort and ease in using the application in viewing the target output of the study. However, the software has its limitations in accessing the instructional video due to the higher memory required by the program that

the android capacity of the phone or tablet cannot handle. Nevertheless, the instructional video is accessible and made available in the YouTube link and made available on the internet. Conclusively, the application provides information and reference in the sport of Sepaktakraw useful in local to international sports organizations. Hence, the application is reliable teaching material that will support the accessibility of the students, athletes, and coaches to learning and skill development.

RECOMMENDATION

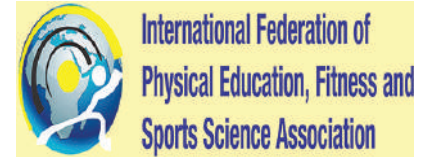
Based on the conclusions derived from the study, the UMAK and the CHK should collaborate in institutionalizing the development of android-based instructional materials in teaching PE and other subjects for a BPW and bachelor in sports science. Furthermore, PE instructors and coaches must consider the android application to the limitations of instructional materials in teaching PE in remote teaching and learning.

Future researchers should create an android-based coursepack in teaching and coaching the students and athletes. Hence, further studies and investigations regarding the impacts of android-based coursepack on knowledge vis-a-vis physical performance. Most especially in the challenging pandemic where athletes and students are mandated to stay at home, the availability of android-based coursepacks in all sports will be relevant. Furthermore, sustainability in health, body condition, and education among students and athletes are substantial factors to consider.

REFERENCES

1. Bada SO, Olusegun S. Constructivism learning theory: A paradigm for teaching and learning. *J Res Method Educ* 2015;5:66-70.
2. Bell RL, Maeng JL, Binns IC. Learning in context: Technology integration in a teacher preparation program informed by situated learning theory. *J Res Sci Teach* 2013;50:348-79.
3. Borba MC, Askar P, Engelbrecht J, Gadanidis G, Llinares S, Aguilar MS. Blended learning, e-learning and mobile learning in mathematics education. *ZDM* 2016;48:589-610.

4. Candia BA, Reyes EP, Sevileno RK, Obando JH. Statistical model for muscle memory in basketball. *Int J Innov Sci Res Technol* 2021;6:470-81.
5. Chang CY, Hwang GJ. Trends in digital game-based learning in the mobile era: A systematic review of journal publications from 2007 to 2016. *Int J Mobile Learn Organ* 2019;13:68-90.
6. Commission on Higher Education (CHED) Memorandum Order Number 81, Series of 2017. Policies Standards and Guidelines for Bachelor of Science in Exercise and Sports Sciences (BSESS). Available form: <https://www.ched.gov.ph/wp-content/uploads/2017/11/CMO-No.-81-s.-2017.pdf>
7. Conejar RJ, Chung HS, Kim HK. A study of delivering education through mobile learning. *Proc World Cong Eng Comput Sci* 2015;1:701-2.
8. Djouab R, Bari M. An ISO 9126 based quality model for the e-learning systems. *Int J Inform Educ Technol* 2016;6:370.
9. Ford K, Lott L. The impact of technology on constructivist pedagogies. *Theories Educ Technol* 2009;15:3-13.
10. Franklin RM, Smith J. Practical assessment on the run-iPads as an effective mobile and paperless tool in physical education and teaching. *Res Learn Technol* 2015;23:27986.
11. Hasanuddin I, Taha Z, Yusoff N, Ahmad N, Ghazilla RA, Usman H, *et al.* Investigation of the head impact power of a sepak takraw ball on sepak takraw players. *Malaysian J Mov Health Exerc* 2015;4:21.
12. Karoui A, Marfisi-Schottman I, George S. A nested design approach for mobile learning games. In: *Proceedings of the 16th World Conference on Mobile and Contextual Learning*. Tamil Nadu: Digital Library; 2017. p. 1-4.
13. Molenda M. In search of the elusive ADDIE model. *Perf Improv* 2015;54:40-2.
14. Kurt S. *Analyze, Design, Development, Implement and Evaluation (ADDIE) Model: Instructional Design*; 2018. Available form: <https://www.educationaltechnology.net/the-addie-model-instructional-design>
15. Singh V, Thurman A. How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). *Am J Dis Educ* 2019;3:289-306.
16. Kemp S. *Digital 2020: Global Digital Overview*; 2020. Available from: <https://www.datareportal.com/reports/digital-2020-global-digital-overview>
17. Sportsmatik. *Sepak Takraw*; 2021. Available from: <https://www.sportsmatik.com/sports-corner/sports-know-how/sepak-takraw/history>
18. Traxler J. *The Evolution of Mobile Learning*. United States: Informing Science; 2009. p. 1-14.
19. Traxler J, Kukulska-Hulme A. Introduction to the next generation of mobile learning. In: *Mobile Learning*. United Kingdom: Routledge; 2015. p. 1-10.



Research Article

A comparative study of body image and eating disorder between hosteller and non-hosteller female students of Chandigarh

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ABSTRACT

The purpose of the study was to compare body image and eating disorder between hosteller and non-hosteller female students of Chandigarh. For the purpose of the study, total 400 students (hosteller-200 and non-hosteller-200) were selected conveniently and purposively as the subject. The subjects were selected from various hostels of private Colleges of Chandigarh. The age of the subjects ranged from 18 to 25 years. Keeping the feasibility criterion in mind, the body image and eating disorder were selected as variables for the present study. Body image was assessed with the help of body image questionnaire developed by Nash (1997), and eating disorder was assessed with the help of eating disorders questionnaire developed by Garner *et al.* (1983). To compare the mean differences between hosteller and non-hosteller students of private college, descriptive statistics, that is, mean, standard deviation, and *t*-test were used. For testing hypothesis, level of significance was set at 0.05 level of confidence. The results of the study indicate insignificant difference between private college hosteller and non-hosteller female students on body image and eating disorder as obtained $P > 0.05$.

Keywords: Body image and eating disorder, Hosteller, Non-hosteller

INTRODUCTION

Body image is that the picture one has of one's body, what it's like to one's self and how one think it's to others; this image may be accurate or inaccurate and is usually subject to change (Kottek and Thomas, 2006). The things we do because we are dissatisfied with our bodies (Ricciardelli and Yager, 2016). The human society has always placed great worth to the beauty of the physical body. The individuals differ in their perceptions of their own body and their perceptions might not suitable the societal standards and expectations. Having a positive body image is not simply the alternative of being dissatisfied with one's appearance, but rather involves a genuine appreciation of the body for its capabilities. Those with a positive body image accept and value their bodies during a functional sense instead of what they give the impression of being like. They

have positive self-esteem, healthy attitudes toward food and eating, and are able to resist peer and media pressures to adapt. On the opposite hand, those with body image concerns place an undue importance on their appearance, weight, size, or shape and avoid social and personal situations where they feel that they are being judged on their appearance. There is evidence to suggest that those with the high levels of body image concern engage in unhealthy weight control measures and should develop eating disorders and other associated behaviors like steroid use (Ricciardelli and Yager, 2016).

An eating disorder is "a persistent disturbance of eating behavior or behavior intended to manage weight, which significantly impairs physical health or psychosocial functioning." This disturbance should not be secondary to any recognized general medical disorder (e.g., a hypothalamic tumor) or the other psychiatric disorder, that is an anxiety disorder (Favor, 2008). Eating disorder is that the name given to problems about a person's eating style. There are three main ways in which people can have difficulties with their eating

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these are when they eat insufficient or when they do harmful things to themselves get obviate the food they have eaten. However, eating disorder is not just about how someone eats. They also associated with how people think and feel about themselves, their bodies, and food.

Objective of the Study

The objective of the study was to find out difference between hosteller and non-hosteller female students of private college on body image and eating disorder.

METHODS AND PROCEDURE

For the purpose of the present study, total 400 female students (200 hostellers and 200 non-hostellers) were selected conveniently and purposively. The subjects were selected from private colleges of Panjab University, Chandigarh. The age of the subjects ranged from 18 to 25 years. Body image of the subjects was assessed using body image questionnaire developed by Nash (1997). It has 12 items and calculating by adding the points which was circled by subjects. The lowest possible score is 0 and this indicates a positive body image. The highest possible score is 36 and this indicate an unhealthy body image and a score higher than 14 suggests a need to develop a healthier body image. Eating disorders of the subjects were assessed using eating disorders questionnaire developed by Garner *et al.* (1983). It has 40 test items and calculates by adding the points which was circled by subjects in each statement. The possible range is 0–120. If the score of subjects is higher than 50 suggests about the eating disorder. A score between 30 and 50 suggests a borderline eating disorder. A score <30 is within the normal range. Among those with normal eating habits, the average score is 15.4. To compare the mean differences between hosteller and non-hosteller students of private college, descriptive statistics, that is, mean, standard deviation, and *t*-test were used. For testing hypothesis, level of significance was set at 0.05 level of confidence.

RESULTS AND FINDINGS OF THE STUDY

Table 1 reveals that insignificant difference was found between hosteller and non-hosteller female students of Chandigarh on

the variables of body image and eating disorder since *t*-value of 0.934 and 0.137, respectively, was found lesser than the required tabulated value and $P > 0.05$.

DISCUSSION OF FINDINGS

From the findings of this study, it was evident that the insignificant difference was found between hostellers and non-hostellers on body image and eating disorder. Individuals who are suffering from various kinds of eating disorders have possibilities of having more conscious about their physique and appearance. Their consciousness seems to mainly about body shape and weight of body (American Psychiatric Association, 2000; Cooper and Fairburn, 1987). Whether, in a recent research, Sussman and Truong (2012) found that “eating disorders are generally defined in psychiatric terms as a disturbance in the perception of body shape and poor body image, resulting in restrictive or binge eating/purging 134 patterns.” Existing past reviews had showed eating disorders as ethnicity-based syndrome in about 7 million Americans and 1.15 million citizens of the UK, predominantly women, suffering from these syndromes. Idealize and usually unachievable body shape of extreme slimness appears to be at the center of the syndrome. Even though every civilization has a normative body image and shape of body connected with beauty, allied eating disorders had been establish primarily in Western countries. As universal migration has reach past highs with society pattern from Latin American, African, Asian nation to foreign countries. However, query raised possessions for immigration of female’s bodily shape as well as body image and risk of having eating disorder. Recent study concluded in existence reviews of migration of bodily perception as well as “eating behavior.” Whether, belonging is multifaceted associated to family traditions, intensity of learning cultural norms or demographical attributes has effect on body image dissatisfaction with person’s body and eating disorders. Procedural troubles plague this study and the contradictory use of psychological tests. Derenne and Beresin (2006) found that “eating disorders, including obesity, are a major public health problem today. Throughout history, body image has been determined by various factors, including politics and media. Exposure to mass media (television, movies, magazines, and Internet) is correlated with obesity and negative body image, which may lead to disordered eating.”

Table 1: Descriptive statistics of hosteller and non-hosteller on body image and eating disorder

Variable	Group	<i>n</i>	Mean	Std. Deviation	<i>t</i>	df	Sig.
Body Image	Hosteller	200	6.38	6.03	0.083	398	0.934
	Non-Hosteller	200	6.33	6.03			
Eating Disorder	Hosteller	200	31.27	18.31	1.489	398	0.137
	Non-Hosteller	200	34.14	20.19			

*Statistically significant at 0.05 level of significance

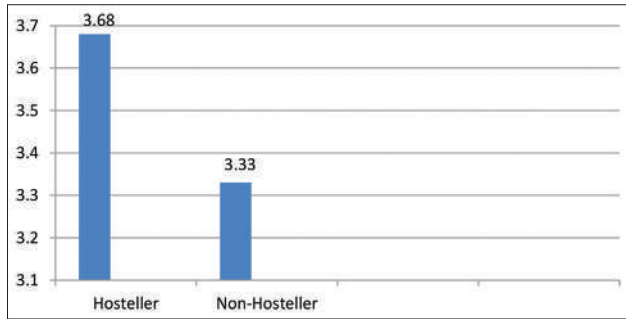


Figure 1: Graphical representation of means of hosteller and non-hosteller on body image

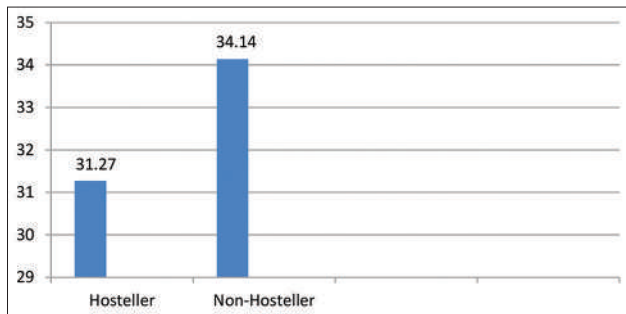


Figure 2: Graphical representation of means of hosteller and non-hosteller on eating disorder

The present media is everywhere and authoritative, primary to enlarged body image dissatisfaction between both males and females. Parents have to bound children's disclosure to mass media, encourage nutritious eating behavior and restrained bodily actions and promote contribution in actions that enhance self-esteem and proficiency. Financial support for excellence, noticeable publicity campaign promotes healthy living style that may enhance consciousness toward health.

CONCLUSIONS

On the basis of findings of the study, the following conclusions may be drawn:

- The results of the study indicate that insignificant difference was found between the hosteller and non-hosteller female college students of Chandigarh on the variable of body Image
- The results of the study indicate that insignificant difference was found between hosteller and non-hosteller female college students of Chandigarh on the variable of eating disorder.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4th ed. Washington, DC: American Psychiatric Association; 2000.
2. Cooper Z, Fairburn CC. The eating disorder examination: A semi-structured interview for the assessment of the specific psychopathology of eating disorders. *Int J Eat Disord* 1987;6:1-8.
3. Derenne JL, Beresin EV. Body image, media and eating disorders. *Acad Psychiatry* 2006;30:257-61.
4. Garner DM, Olmstead MP, Polivy J. Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *Int J Eat Disord* 1983;2:15-34.
5. Kotecki J, Thomas DQ. Physical Activity and Health: An Interactive Approach. † United States: Jones and Bartlett Publishers, Inc.; 2006.
6. Nash JD. The New Maximize Your Body Potential. Palo Alto, California: Bull Publishing; 1997.
7. Ricciardelli LA, Yager Z. Adolescence and Body Image: From Development to Preventing Dissatisfaction, New York: Routledge; 2016.
8. Sussman M, Truong N. Body image and eating disorders among immigrants. In: Preedi VR, editor. Handbook of Behavior Food, and Nutrition. Berlin, Germany: Springer Science Business Media; 2011. p. 3241-54.



Research Article

Effect of guava leaves water on controlling hypertension

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ABSTRACT

The objectives of this study are to know the effect of the guava leaves (GL) water on controlling the hyper tension among the adult population (MANAGE TRAINEES) and create awareness for a healthy lifestyle. The samples for the study consist of 53 MANAGE Trainees from various places across the nation and some foreign trainees. In this present scenario of the COVID-19, trainees consumed GL water for 6 weeks regularly. Hypertension is not a disease, it is a metabolic disorder. Regular consumption of GL water is an effective medicine in reducing blood pressure. In the evening, before sunset pluck two tender GL and wash it thoroughly and dip in a glass full of clean water. The leaves have to soak in the water for minimum 8 h. In the early morning, as soon as wake up (after completion of Nature call) removes the GL from the water and drink the water. GL water contains higher levels of potassium and soluble fiber which will lowers the blood pressure. Eating a healthier diet with less salt (Eat more potassium and less sodium) can help to reduce the blood pressure. A pretested structured online questionnaire was provided to 53 people of the adult population. In the present scenario of the COVID-19, the mode of conducting the survey was made through online means. The questionnaires were circulated with the help of WhatsApp. The information was obtained with the help of Google forms. The results of the study show that there is a significant result in lowering and controlled the blood pressure. Hence, consumption of GL water can lowers the blood pressure and minimize the morbidity and mortality among the hypertensive persons.

Keywords: Guava leaves, Hypertension, Metabolic disorder, Morbidity, Mortality

INTRODUCTION

Effect of guava leaves (GL) water on controlling hyper tension

The higher levels of potassium and soluble fiber in GL. In addition, GL extract has been linked to lower blood pressure. A decrease in bad low density lipoprotein cholesterol and rise in good high density lipoprotein cholesterol.

High blood pressure of unknown cause is known as essential hypertension. It is not a disease but only a symptom indicating that some disease is progressing. Cardiovascular disease,

tumors of the brain, hyper thyroidism, renal diseases, diseases of ovaries, and pituitary may cause hypertension. Too many red blood cells having high viscosity of blood may also cause high blood pressure. Heredity, stress, smoking, narrowing of the main blood vessels due to hormone secretions especially cortisol, adrenaline, obesity, etc., are the predisposing factors of high blood pressure. It is advisable to avoid a high intake of animal or hydrogenated fat in cases of high blood pressure. Protein foods are usually rich in sodium and, therefore, protein restriction of 20 g is advised in severe cases of hypertension. Sodium restriction accompanied by weight reduction can effectively control moderate and mild arterial blood pressure.^[1] Dube *et al.* (2021): *Psidium guajava* L. is eugolized as “Apple of Tropics” due to its high nutritive value and diversified uses. The medicinal properties of guava fruit, leaf, and other parts of the plant are also well known in traditional system

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of medicine. Guava is also a rich source of antioxidants and thus can help to prevent degenerative diseases. Different parts of guava have been traditionally used in the folk medicine of several civilization. The extracts from GL exhibited good antioxidant activity as well as free radical-scavenging capacity. It contains important phytoconstituents such as tannins, triterpenes, quercetin, guajanoic acid, saponins, carotenoids, lectins, leukocyanidinm, ellagic acid, beta-sitosterol, uvaol, oleanolic acid, and ursolic acid. *P. guajava* possess enormous medicinally important activities such as antioxidant, antimicrobial, anti-inflammatory antiplasmodial, antispasmodic, cardioactive, antidiabetic, anti-inflammatory and antinociceptive activities, supporting its traditional uses.^[2] Kumar *et al.* (2021): *P. guajava* (L.) belongs to the Myrtaceae family and it is an important fruit that is tropical areas such as India, Indonesia, Pakistan, Bangladesh, and South America. The leaves of the guava plant have been studied for their health benefits which are attributed to their plethora of phytochemicals, such as quercetin, avicularin, apigenin, guaijaverin, kaempferol, hyperin, myricetin, gallic acid, catechin, epicatechin, chlorogenic acid, epigallocatechin gallate and caffeic acid. Extracts from GLs have been studied for their biological activities, including anticancer, antidiabetic, antioxidant, antidiarrheal, antimicrobial, lipid-lowering, and hepatoprotection activities. In the present review, we comprehensively present the nutritional profile and phytochemical profile of GLs. Further, various bioactivities of the GL extracts are also discussed critically. Considering the phytochemical profile and beneficial effects of GLs, they can potentially be used as an ingredient in the development of functional foods and pharmaceuticals. More detailed clinical trials need to be conducted to establish the efficacy of the GL extracts.

Aims and Objectives

1. The objective of this survey was to study the effect of the GL water on controlling the hypertension
2. To assess the knowledge about the importance of healthy life style
3. To spread the awareness and educate the people in general about the pivotal role of GL water and hygiene food practices for a healthy life style.

METHODOLOGY

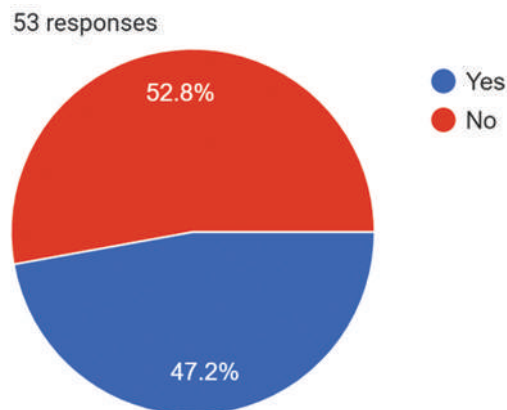
The samples for the study consists of 53 trainees of MANAGE trainees from various places across the nation and some foreign trainees. Trainees have been consuming GL water for 6 weeks regularly in the morning. A survey was conducted using an online questionnaire, a structured questionnaire among 53 trainees of the MANAGE. Due to this present scenario of the COVID-19, the mode of conducting the survey was made through online means. The method of filling the questionnaire was very easy. The information was obtained with the help of

Google forms. The questionnaire was used to elicit details to collect information on (i) respondents data, (ii) project data.

The responses were analyzed using Microsoft Excel; Google docs, and Google forms.

RESULTS AND DISCUSSION

Are you Taking Any Medications?



In this study, 47.2% of the respondents are taking medication and 52.8% of the respondents are not taking any medications and they are adopting alternative medicines. Alternative medicine is an effective method to overcome the life style disorders. GL water is one of the alternative medicines, which has no side effects.

Hyper Tension before Consumption of GL Water

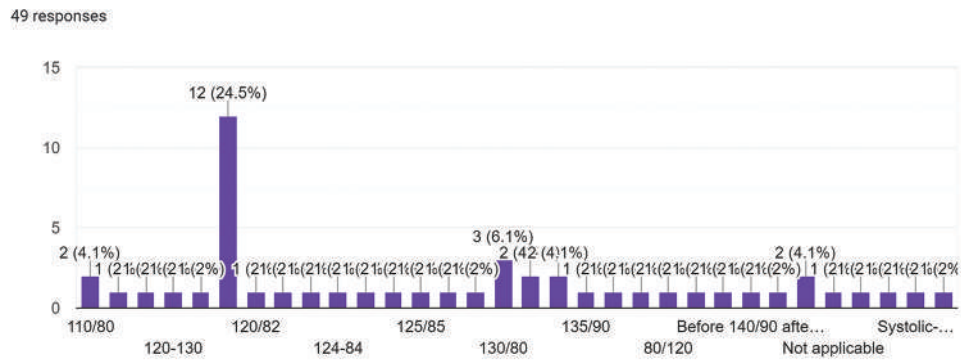
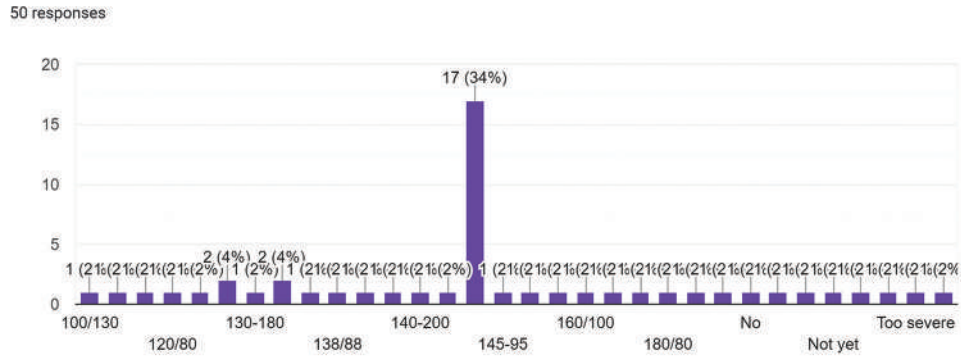
Hypertension is not a disease; it is a lifestyle disorder or metabolic disorder. It is also known as blood pressure. The main reasons for hypertension are stress, smoking, obesity, and alcohol consumption. In this study, respondent's hypertension before consumption of GL water is abnormal (144/94).

Hypertension after Consumption of GL Water

GL water is an effective alternative medicine to control the hyper tension in this modern era. GL water contains higher levels of potassium and soluble fiber which will lowers the blood pressure. Eating a healthier diet with less salt (Eat more potassium and less sodium) can help to reduce the blood pressure. In this study, a tremendous changes in the hyper tension of the respondents, after consumption of GL water is normal (118/80).

CONCLUSION

As per the survey, hypertensive persons consuming GL water for controlling hypertension had a positive result. A drastic change in their blood pressure. A well-balanced diet is very



much important to maintain one’s health. Hence, trainees started adapting a well-balanced diet daily. Undoubtedly, consumption of GL water is an effective (drink) for controlling of the hypertension. Trainees were started consumption of GL water regularly in their lifestyle for controlling the hypertension.

RECOMMENDATIONS

- Guava fruits and leaves helps to lower blood sugar levels
- Guava fruits and leaves boost heart health
- GL have an anticancer effect

- GL aid for weight loss
- GL may help relieve painful symptoms of menstruation
- Moreover, it will benefit for digestive system and boost your immunity.

REFERENCES

1. Dube A, Satankar N, Pandey P, Rich medicinal qualities of Poor man’s apple *Psidium guajava* L. J Pharmacogn Phytochem 2021;10:807-10.
2. Kumar M, Tomar M, Saurabh V, Nair MS, Maheshwari C, Guava leaves: Nutritional composition. Phytochem Prof Health Promot Bioactiv 2021;10:752.



Review Article

Boxing injuries, concussion, and its impact on brain of boxer

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ABSTRACT

A head injury is any trauma that leads to injury of the scalp, skull, or brain. The injury can range from a minor bump on the skull to serious brain injuries. Head injury can be classified as either closed or penetrating. In closed head injury the head sustains a blunt force by striking against an object. In penetrating head injuries, a high velocity object breaks through the skull and enters the brain. Concussion is a complex pathophysiological process affecting the brain, induced by traumatic biochemical forces. Immediately following a concussion, an athlete is usually advised physical and cognitive rest until post-concussion symptoms abate. The athlete then enters a step-wise return to play protocol. Premature returns to play risk a second concussion, second impact syndrome, exacerbation, and persistence of post-concussive symptoms. Various sports governing organizations such as IABA, WBA, WBC, and IBC have developed post-concussion return to play protocols. **Discussion:** Amateur boxing and professional boxing are contact sports in which concussions are very common due to hitting on head-and-neck. Concussion/Head Blow, Algorithm of Knockout (KO) Boxer Management, KO or Referee Stop the Contest, Evaluating Head Injury, Head Injury Assessment, Concussion Evaluation, computed tomography scan – when to refer a boxer, suspension period are the things to discuss in details. **Conclusions:** Educate everyone dealing with boxer must be aware of the signs, symptoms, and ramifications of head injuries and concussions.

Keywords: Algorithm, Concussion, Safety, Traumatic

INTRODUCTION

What is concussion?

- Concussion is a traumatic brain injury (TBI) that interferes with normal function of the brain. TBI is defined as a form of acquired brain injury from a blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain. TBI can result when the head suddenly and violently hits an object or when an object pierces the skull and enters in to the brain tissue.

Sports Concussion

Concussions are traumatic head injuries that occur from both mild and severe blows to the head. Some head injuries may appear to be mild but research is finding that concussions can

have serious, long-term effect, especially repeat head injuries or cumulative concussions.

- Sports related concussion may be caused either by a direct blow to the head, face, neck, or elsewhere on the body with an “impulsive” force transmitted to the head
- Sports-related concussion typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours
- Sports-related concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies
- Sports related concussion results in a range of clinical symptoms that may or may not involve loss of consciousness. Resolution of clinical and cognitive symptoms typically follows a sequential course. However, it is important to note that in some cases symptoms may be prolonged.

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Chronic traumatic encephalopathy (CTE) is a serious complication of repeated concussions. Boxers get hit in the head repeatedly and can suffer from multiple concussions, which is a risk factor for CTE. It is also known as punch drunk syndrome, boxer's brain, or dementia pugilistica. What is the percentage of boxers with CTE? The exact number of boxers who develop CTE has not yet been defined, but some authorities estimate around 20% of boxers have CTE. Some experts believe that number is probable much higher due to the nature of boxing including successive blows to the head. Apart from physical damage to head, the psychological effects of boxing and CTE are also found.

Even with today's safety standard, people do still die in the ring. It is estimated that between 1980 and 2011, an average of 13 people died every year from boxing injuries. Some boxers succumb to their last match. Other fighters, like Boris Stanchoy, actually died in the ring from complications like cardiac arrest.

Concussion Symptoms

- Confusion, memory loss, unconsciousness, headache, vomiting, vision changes, disorientation, motor dysfunctions, sensory dysfunctions like changes in ability to see, taste, or hear, dizziness, hyper sensitivity to light or sound, and cognitive dysfunctions.

Late Concussion May Include

- Poor concentration, memory disturbance, sleep disturbance, personality changes, and fatigue
- The symptoms can creep up on you long after you stop boxing. The changes caused by CTE can start appearing decades after your last brain trauma. Famous boxers with CTE include Sugar Ray Robinson, Joe Louis, Gray Goodridge, and many more. Concussion occurs when the brain bounces inside the skull with such force that abnormal electrical circuits are activated. This can result in abnormal electrical signals being sent to the sleep/wake center in the brain. This sleep/wake center in the brain is called the reticular activating system, then the person becomes unconscious. It is knockout (KO). Recently, a Jordanian Amateur Boxer and Rashed Al-Swaisat tragically died after being KO at the Youth World Championship in Kielce, Poland, April 16, 2021.

List of 10 Famous Boxers Died in Boxing

1. Frankie Campbell (vs. Max Baer, August 25, 1930).
2. Jimmy Doyle (vs. Sugar Ray Robinson, June 24, 1947).
3. Davey Moore (vs. Sugar Ramos, March 21, 1963)
4. Young Ali (vs. Barry McGuigan, June 14, 1982)
5. Kim Duk-Koo (vs. Ray Mancini, November 13, 1982)
6. Roman Simakov (vs. Sergey Kovalev, December 5, 2011)
7. Mike Towell (vs. Dale Evans, September 29, 2016)
8. Scott Wastgarth (vs. Dec Speman, February 24, 2018)

9. Maxim Dadashev (vs. Sebril Matias, July 19, 2019)
10. Patrick Day (vs. Charles Conwell, October 12, 2019)

Some of the Pictures of Brain Injuries, Head Injuries, and Concussions of Boxing



TBI



Concussion or Head Blows

A referee should stop a bout if the boxer is demonstrating signs of altered consciousness. Occasionally, the ring side doctors will be called to evaluate a boxer for concussion in the neutral corner (Approx. 1 min).

The ring side doctor must evaluate the boxer's state immediately after the blow-stunned, unbalanced, or uncoordinated. Evaluate the boxer's approach to corner-swaying, abnormal? Is the boxer disoriented, vacant, and dismayed? Check Pupils- equal, reactive, nystagmus, check for signs of cranial nerve weakness, speak to athlete – are responses adequate-incorrect, slurred? Conduct balance test – BESS. (if the ring side doctor has any indication that the boxer's response is abnormal or there is a suspicion of a concussion – the bout must be stopped and the boxer sent to the medical room for a concussion evaluation (approximately 20–25 min after the end of the bout).

ALGORITHM FOR KO MANAGEMENT

AVPU

A detailed neurological examination can take 30 min or more to perform, the doctor must have some form of abbreviated examination system that quickly but accurately reflects the boxer's neurological status. Therefore, the neurological examination in the primary survey should take no longer than 1 min.

Alert

The patient is alert, consciousness with open eyes, and is cooperative.

Voice

Responds to a voice command, but is not otherwise alert.

Pain

Boxer only responds to a painful stimulus.

Unresponsive

The boxer is unresponsive to both verbal and painful stimuli. The advantage of this evaluation is that it takes no more than a few seconds to conduct.

KO OR REFEREE STOP THE CONTEST (RSC)

All boxers who have lost by KO or RSC, unless they have been transferred to hospital, must report to medical room for a medical examination. The “H” or “B” should be added by the ringside doctor, not by the referee. KO-H or RSC-H (stoppages due to punches to the head), KO-B or RSC-B (Stoppages due to punches to the body).

EVALUATING A HEAD INJURY

All boxers who have suffered a potentially serious head blow after an RSC or KO, or who have received multiple head blows during a bout must be examined in the medical room after leaving the FOP. The ringside doctor will conduct an immediate head injury evaluation and if KO, a concussion evaluation. It is often better to wait 30 min after the head injury. Evaluation before conducting a concussion evaluation as many findings may be delayed. In such a case, a SCAT 3 card must be completed. The ringside doctor must note an appropriate restriction period in the Boxer’s Record Book and whether medical clearance is needed to return to box again.

HEAD INJURY ASSESSMENT

The purpose of the examination is to immediately identify cranial fractures and brain injuries. This includes, (1) light reflex of the boxer, (2) examine the eyes for movement and nystagmus, (3) Glasgow coma scale, and (4) examine for cranial fracture, deformities, binocular hematomas, battles sign, and cerebrospinal fluid leakage. Otoscopy for blood, neck pain, neck tenderness, and cervical range of motion.

CONCUSSION EVALUATION

This is a mandatory examination for all boxers who have received a KO, RSC, or a boxer who has received multiple head blows where there is possibility of boxer having suffered a concussion.

Ring side doctor must complete *SCAT 3 card correctly, *take a copy, and *give the boxer information on symptoms and when to contact, a doctor should worsen, *decide the minimum suspension, and enter this into the Boxers Record Book.

COMPUTED TOMOGRAPHY (CT) SCAN- WHEN TO REFER A BOXER

A CT head scan is useful in diagnosing intracranial hemorrhage and cranial fracture. Boxer should refer if (1) There has been a loss of consciousness. (2) All incidence of KO, (3) Persistent Amnesia, and (4) GCS 14 or less.

SUSPENSION PERIOD

A suspension period is a period of time in which a boxer is not allowed to train, spar, or compete. Suspension period are enforced to protect the boxers health. It must be indicated the time of the suspension and if clearance is required or not in the medical restriction form.

1. KO or RSC due to body blow then the restriction periods shall be decided by the ringside doctor
2. Single occurrence of KO-H or RSC-H
If no loss of consciousness
The boxer may not take part in boxing or sparring at least 30 days
3. Loss of consciousness <1 min
For a period of at least 3 months
4. Loss of consciousness more than 1 min
For a period of 6 months (needs to be recorded carefully)
5. Double occurrence of KO or RSC-H

If during a period of 3 months, a boxer twice loses a bout due to KO or RSC-H without loss of consciousness, then the boxer may not take part in boxing or sparring for a period of 3 months after the second occurrence.

TRIPLE OCCURRENCE OF KO OR RSC-H

If during a period of 12 months, the boxer suffers three KOs (With loss of consciousness under 1 min) or if three bouts are stopped by the referee due to the boxer having received heavy blows to the head, then the boxer may not take part in boxing or sparring for 1 year after third occurrence. Before a boxer is allowed to compete after the suspension period has elapsed, the boxer must be declared as fit to box by a doctor or by a neurologist. If necessary, after a specialist examination has been conducted and computerized tomography or magnetic resonance imaging of the brain has been carried out.

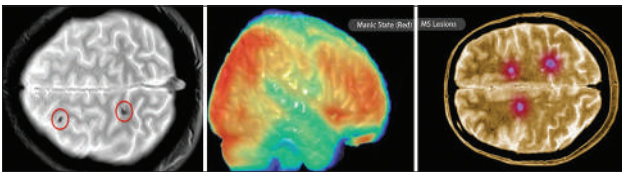
FIRST AID FOR HEAD INJURY AND CONCUSSION

- Check the person's airway, breathing, and circulation. If necessary, begin reuse breathing and CPR
- Stop any bleeding by firmly pressing cloth on the wound. If the injury is serious, be careful not to move the person's head. If blood soaks through the cloth, do not remove it. Place another cloth over the first one
- If you suspect skull fracture, do not apply direct pressure to the bleeding site, and do not remove any debris from the wound. Cover the wound with sterilize gauze dressing
- If the person is vomiting, roll the head, neck, and body as one unit to prevent choking. This still protects the spine, which you must always assume is injured in the case of a head injury
- Apply ice packs to swollen areas.

DO NOT

- Do not wash ahead wound that is deep or bleeding a lot
- Do not move the person unless absolutely necessary
- Do not shake the person if he or she seems dazed
- Do not pick up a fallen boxer with any sign of head injury
- Do not drink alcohol within 48 h of a serious head injury.

If you suffer head injury, stop activity, and seek medical attention. Even if you think it is a mild bump on the head, it could turn into something serious if you return to sports.



Concussions Bipolar Disorder Multiple Sclerosis

RECOMMENDATIONS

- Always use safety equipment during boxing
- Make sure boxers have safe area in which to play
- Supervise at any stage of boxing with qualified doctors
- The development of strong neck and abdomen musculature, to keep the neck and abdomen rigid at impact
- Investigation should be made into the advantages and disadvantages of head gears
- Epidemiological research in to the incidence of head injuries and concussion factors should be under taken
- Yoga and meditation sessions should be conducted for the boxers
- Regular health checkup, proper relaxation, and recovery method should be followed by the boxers
- Proper medical advice should be followed after any tournaments.

CONCLUSIONS

Educate everyone dealing with boxer must be aware of the signs, symptoms, and ramifications of head injuries and concussions. Concussion policies must be in place at every level.

REFERENCES

1. The Guardian for 200 years. Available from: <https://www.theguardian.com>
2. Kevin Rezzadeh. Available from: <https://www.clinicalcorrelations.org>
3. Post-concussion Return to Boxing Protocol-SciELOSA. Available from: <https://www.scielo.org.za>
4. Knockout: Boxing, Brain Damage is the Goal. Available from: <https://www.medpagetoday.com>
5. Shocking Boxing Head Injury Statistics You Should Not Ignore. Available from: <https://www.made4fighters.com>
6. IABA Medical Rules. Available from: <https://www.aiba.org>
7. Sports-related Head Injury. Available from: <https://www.anas.org>
8. The History and Current Principles of Concussion Management in Boxing. Available from: <https://www.aspeatar.com>



Review Article

Balance diet and athlete fitness

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INTRODUCTION

Balance diet is the biochemical and physiological process by which an organism uses food to support its life. Nutrition is an important part of sports performance for sports player. Balance diet is important for growth development and good health. A well balanced diet is essential for growing athletes. Balanced diet plays a key role in athletic fitness. A professional athlete to improve your health and fitness and it also important for skill achievement. Diet is essential for supporting an athlete general muscle growth, energy, and their training needs. Suitable diet gives a person with enough energy nutrients to meet the demands of training and exercise. Diet for athlete's performance comes down to your personal goal. A well planned nutritious diet should meet most of an athlete's vitamin and mineral needs and provide enough protein to promote muscle growth and repair. Food rich in unrefined carbohydrates such as grain breads and cereals should form basis of diet.

ATHLETE AND ESSENTIAL DIET

A balance diet is essential for growing athlete's fitness to maintain proper growth and skill performance. An ideal diet comprises 45–64.9% carbohydrates, 10–30% protein, and 25–35% fat.

ATHLETE ENERGY AND DIET

Carbohydrate, fat, protein, mineral, vitamin, and water provides body fuel to maintain energy. Carbohydrates are the primary energy fuel used by muscle for maintain muscle power and muscle endurance strength. Fat is second one essential

component of diet; it helps the body to absorb nutrients as well as great source of energy, it also helps to increase energy level for good health and improve weight.

NUTRIENTS FOR ATHLETE

Poor nutrition can lead to fatigue dehydration and poor health. Nutrients are an essential substance for athlete, which are supplied by food and are needed as a source of energy for various activities of the body. They can be classified into two types:

1. Micronutrients
2. Macronutrients

Micronutrients

Micronutrients are those nutrients which are required in less quantity, mineral and vitamins are micronutrients. Some minerals such as sulfur, phosphorus, copper, and zinc are micronutrients.

- Sulfur: Sulfur helps the body to eliminate fat and reduce the level of inflammation histamines, for example, long distance runner
- Phosphorus: Phosphorus is an important component of high energy components; it is essential for muscle function as well as components that participate in oxygen delivery to muscle. Phosphate can also act as acid neutralizer which might have effects on fatigue
- Copper: Copper is an essential trace material necessary for survival. It is found in all body tissue and plays a role in making red blood cells and maintaining nerve cells and the immune system
- Zinc: Athlete who has low level of zinc is at risk for decreased bone mineral density; zinc is essential to form collagen tissue, to heal wound, and to prevent osteoporosis.

Macronutrients

Macronutrients are the nutrients that we need in large quantities. That provides us with energy carbohydrates protein, fats, fiber,

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water, and vitamins. There are three main macronutrients: Carbohydrates, fat, and proteins.

Carbohydrates

Carbohydrates are compound of carbon, hydrogen, and oxygen in fixed ratio, it provides energy that they are main sources of energy. There are two types of carbohydrates:

- Simple carbohydrate: Glucose, fructose, sucrose, maltose, lactose, and galactose. These are soluble in H₂O
- Complex carbohydrates: Starch, dextrines, glycogen, and cellulose. They are soluble in water
- Sources of carbohydrates: Bread, cereals, rice, maize, corn, milk, sugar, sugarcane, honey, grapes, cake, ice-cream, milk products, and fruits and vegetables.

Protein

Protein is the basic structure of all living organism; it is present in every cell of the body and it helping to build and repair tissues. It is also used to make enzyme hormones and a variety of body chemicals it forming the building blocks of bones, muscles, cartilage, skin, and blood. They are of two types:

- Non-essential proteins: The human body needs 20 amino acids for synthesis of its protein. The body can make only 13 of the amino acids. They are called as non-essential proteins
- Essential proteins: There are nine essential amino acids which are taken by food
- Sources of protein: Meat, fish, eggs, pulses, nuts, seed, and soya products.

Fat

Fat is an essential components of macronutrients. It helps the body to a great sources of energy. Fat is classified into two types:

1. Saturated fats
2. Unsaturated fats
 - Saturated fats: Occurs in animal products and processed foods such as meat, dairy, and chips. This type of fat is not considered to be healthy for the heart and it is thought to raise your low-density lipoprotein cholesterol levels
 - Unsaturated fat: Are found in foods such as avocados, olives, nuts, and oily fish. They are considered to be heart healthy.

Energy Drinks

A small amount of dehydration could be detrimental to performance levels. Drinking water is a good way to make yourself hydrated during exercise periods.

Creatine

It is high energy compound which helps to store and provide energy. It is naturally in fish and meat and can also be taken in supplement form.

RECOMMENDATIONS

- To help you perform better and avoid exercising without good diet
- The balance diet for an sports player is not very different from the diet for any healthy persons
- The more time you spend doing the training and exercise.



Research Article

Tikwi Banug: An ethnography on the contextualized physical fitness indigenous game

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ABSTRACT

Games play a key role in the optimum development of an individual in any indigenous community. However, due to the advent of technologies, modernization, and influence of western sports, indigenous games are at the brink of extinction. The ethnographic study investigates the game Tikwi Banug at Sinuda, Kitaotao, Bukidnon. Specifically, it sought to determine the nature and background of the game, identify the components of physical fitness manifested in the game and find out the importance of the game in the context of the Matigsalug-Manobo indigenous community. The results revealed that “Tikwi Banug” is a bird imitation game depicting the “Banug” or Serpent Eagle catching the chicks. It portrays the characteristics of a predatory bird and the protective and caring characteristics of a mother hen for its chicks. In addition, the game manifests different components of physical fitness such as health-related and skill-related. Moreover, the “Tikwi Banug” game is an agent of harmonizing the community, an important portion among Matigaslug-Manobo community to live satisfactorily and happily with others. Thus, the game is beneficial for the physical, social, emotional, and psychological well-being of an individual.

Keywords: Culture, Indigenous games, Matigsalug, Physical fitness, Tikwi Banug

INTRODUCTION

Games are an important cultural element of any indigenous community. However, there are no research studies which focus on the manifestations of the domains of physical fitness components related to indigenous games especially nowadays that it is neglected by the members of the indigenous groups because of new developed technologies. Matigsalug-Manobo indigenous people are one of the most intact and surviving groups in Bukidnon province where the culture in playing indigenous games is dramatically fading. However, one of the known games played by the people is called Tikwi Banug, a bird imitation game. Thus, the study aimed to describe the nature and background of the game, identify the components of physical fitness manifested in the game, and determine the significance of the game in the context of the Matigsalug-Manobo people.

Second is preservation of Filipino culture. Finally, integration is a part of a resource material in physical education program.

METHODOLOGY

The researchers utilized ethnographic approach in the exploration of the study with the use of an interview guide to collect the data. The study was conducted among 15 elders who belong to Matigsalug-Manobo indigenous group at Sinuda, Kitaotao, and Bukidnon. A request letter was given to the Federation of Matigsalug-Manobo Tribal Councils (FEMMATRICS), council of elders, for the conduct of the study then proceeded to collection of data through formal and informal interviews, focus group discussion, participant observation, and researcher’s participation. The data collected were transcribed, analyzed, and interpreted through an inductive and deductive approach of thematic analysis with the application of triangulation technique. Finally, a free, prior and informed consent was given to the research participants.

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RESULTS AND DISCUSSION

Tikwi Banug is a bird imitation game of which “Tikwi” is a term derived from the sound of the Serpent Eagle scientifically known as “*Spilornis Holospilus*” and “Banug” which is basically the Serpent Eagle. The game depicts a Broody also known as a mother hen protecting her chicks from being caught and eaten by “Banug.” In connection with the present study, Campbell (2017) affirms that indigenous games have stories behind their invention. In the context of the game “Tikwi Banug,” the health-related components displayed are cardio-respiratory endurance, muscular strength, muscular endurance, and flexibility of which Barbosa (2003) stated that games play an important part in the learning process specifically on the physical, mental, and moral vitality of a child that is why it is still being practiced and observed. In addition, all the skill-related components are found manifested in the game. Préfontaine (2019) emphasized that games developed the mental and physical strength necessary to survive such as strength, endurance, balance, focus, reflexes, flexibility, and patience. Wilson (2016) affirmed that indigenous games improve physical fitness and well-being as whole. Like any other indigenous games, Tikwi Banug plays a key role in the lives of Matigsalug-Manobo people as an activity that the members of the community learn lessons applicable in real life situations. It is supported by Siregar and Ilham (2019) that traditional games are useful for children’s social, cognitive, and emotional fields. Louth (2019) stipulated that indigenous games are seen as a strong indicator so that one’s culture can survive.

CONCLUSION

Tikwi Banug game is vital to the Matigsalug-Manobo community, it emphasizes enjoyment and shared fun experiences. In addition, the health-related and skill-related physical fitness components are evidently manifested. Finally, indigenous games teach values and life lessons resulting to a more harmonized community.

RECOMMENDATIONS

It is recommended that indigenous games like Tikwi Banug shall be integrated as part of the physical education class activities. Finally, for the future research, school administrators must allocate additional funding to explore similar studies with the collaboration of other researchers in partnership with the local government units.

ACKNOWLEDGMENT

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REFERENCES

1. Asuncion J. The Traditional Filipino Games: Status Check among Generation Z; 2019. Available from: https://www.researchgate.net/publication/336685466_the_traditional_filipino_games_status_check_among_generation_z [Last accessed on 2021 Oct 02].
2. Barbosa AC. In Focus: Traditional Games in the Philippines; 2003. Available from: <https://www.ncca.gov.ph/about-culture-and-arts/in-focus/traditional-games-in-the-philippines> [Last accessed on 2021 Sep 30].
3. Bogopa DL. 2012. Available from: <https://www.africabib.org/rec.php?RID=381063593> [Last accessed on 2021 Oct 05].
4. Campbell M. How Indigenous People in Canada are Reclaiming Lacrosse. Maclean’s; 2017. Available from: <http://www.macleans.ca/society/how-indigenous-canadians-are-reclaiming-lacrosse> [Last accessed on 2021 Oct 07].
5. Lapensee E. Self-Determination in Indigenous Games; 2018. Available from: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315730479-13/self-determination-indigenous-games-elizabeth-lapense%C3%A9> [Last accessed on 2021 Oct 07].
6. Louth S. Traditional Aboriginal Games and Activities; 2019. Available from: <https://www.creativespirits.info/aboriginalculture/sport/traditional-aboriginal-games-activities> [Last accessed on 2021 Oct 10].
7. Mosimege MD. The use of indigenous games in the teaching and learning of Mathematics. *Revemop* 2020;2:e202009.
8. Ndiko L. 2018. Available from: <https://www.etacollege.com/indigenous-games> [Last accessed on 2021 Oct 05].
9. Préfontaine DR. The Role of Indigenous Games in Culture; 2019. Available from: <https://www.ictinc.ca/blog/the-role-of-indigenous-games-in-culture> [Last accessed on 2021 Oct 01].
10. Segwapa S. Participation of Indigenous Games by Youth in Galedwaba Village in Lebokwagomo in LepelleNkumpi District; 2020. Available from: <https://www.univendspace.univen.ac.za/handle/11602/1464> [Last accessed on 2021 Oct 06].
11. Yebron FA. Ethnomathematics of the Matuigsalug Tribe. Philippines Central Mindanao University; 2011.



Research Article

Personality traits of student-athletes of a comprehensive university and its effect on their perceptions of sports coaches' coaching behavior

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ABSTRACT

Good coaching is an essential element in developing the athlete's skills in his/her sport. With the use of many customary or otherwise coaching techniques and strategies and the different personalities, coaching can yield varying results, whether physical or psychological. The study aims to determine the Coaching Behavior of the selected Collegiate Coaches as perceived by the athletes using Coaching Behavioral Scale for Sport (CBS-S). The participants were 100 in total from UAAP Team Individual/Team Sports in men's and women's divisions. In addition, the researchers used descriptive-correlative research to determine the relationship between the student-athletes personality traits and their perceptions on their Coaches Seven Dimensions of Coaching Behavior. Results suggested that athletes associate themselves with the openness personality trait the most, and they grade their coaches' competition strategies the highest. Results also showed a relationship with the openness personality trait and the seven dimensions of coaching behavior except for negative rapport. Neuroticism did not establish any significant relationship with the Seven Dimensions of Coaching Behavior. The researchers recommend the CBS-S should be taken into account by the administration to evaluate their coaches' performance and to broaden the sample size of athletes from different universities or national levels. Furthermore, coaches must understand the importance and significance of psychological skills in training the athlete to adapt their technique better.

Keywords: Openness, Neuroticism, Personality traits, Coaching behavior, Athletes, Sports Coaches

INTRODUCTION

Coaches greatly influence their teams, and the coach's leadership styles and behaviors substantially affect their athletes' performance (Ramzaninezhad and Keshtan, 2009). Therefore, good coaching is an essential element in the developing the athlete's skills in his/her sport. However, with the use of many customary or otherwise coaching techniques and strategies and different personalities of a coach, the effect can lead to varying results, whether physical or psychological, on the athlete. Whenever an approach does not meet the ideal results, the most reasonable course of action would be to change it, wholly or partially. Sometimes, however, the athlete is the first to see the contradictions and what is lacking

with the strategy. Kenow and Williams (1992) stated that the coach might not always be fully aware of how they act, much less how it affects the athletes. The athlete might point it out, but sometimes he/she cannot because the coach is not easily approachable, or the athlete simply does not know where to start.

Evaluating coaches are usually done by assessing the success of the team or player that he/she coaches. However, the process is not wrong. It overlooks elements such as the coaches' behavior affecting the team's success. Fortunately, the Coaching Behavioral Scale for Sport (CBS-S) is one method of assessing the coach's capabilities in depth.

The framework of this study is the coaching efficacy model. Feltz *et al.* developed the construct of coaching efficacy. They used Bandura's theory of self-efficacy as their guiding framework. They defined coaching efficacy as the extent

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to which coaches believe that they can influence their athletes' learning and performance (Boardley *et al.*, 2008). According to Feltz *et al.* (1999), efficacy has been described as multidimensional, consisting of four dimensions: Motivation, game strategy, technique, and character building. Motivation efficacy is the coaches' ability to guide and improve the players' mental state and block out difficulties.

Game strategy efficacy is the coaches' ability to teach their team to play well during the game itself. Technique efficacy is the coaches' efficacy beliefs about their instructional and diagnostic skills. Finally, character-building efficacy concerns the coaches' beliefs in guiding the athletes in their growth as a person and remaining positive toward the sport. This highlights that coaches should actively believe that they can make an impact on their athletes. It also indicates the importance of the coach's role and beliefs because it can reflect onto the athlete they coach. This shows that coaches need to be effective in influencing athletes, reflecting on their athletes' performance.

The study aims to determine the coaching behavior of the University of Santo Tomas UAAP coaches through the athletes' eyes. Therefore, the researchers focused on the coaches' coaching behavior as perceived by the respondents measured by the conducted surveys.

METHODOLOGY

This study is descriptive-correlational research. The participants of this study were selected through the purposive sampling method. There were 100 participants total from University Athletic Association of the Philippines (UAAP) Team Individual/Team Sports in men's and women's divisions. The males consisted of 48 people of the 100 respondents making up 48% of the total respondents, and the females consisted of the remaining 52, hence making up 52% of the total respondents. The criteria for selecting the participants are as follows: The respondents must be current UAAP athletes of UST and shall have spent 2 to 5 playing years in the league. In addition, the respondents are required to have 2–5 years of playing experience with the team, as these are the players who are most likely to have experienced their coach handling them compared to the rookies.

The data measurement or instruments are composed of two parts: First, the big five inventory and second the CBS-S questionnaire. The big five inventory is a 44-item inventory that measures an individual's Personality Traits according to the big five factors: Openness, conscientiousness, extraversion, agreeableness, and Neuroticism. The CBS-S questionnaire consists of 47 items, divided into seven dimensions. These seven dimensions are physical training and planning, technical skills, mental preparation, goal setting, competition strategies, personal rapport, and negative personal rapport. In addition, it

provides a comprehensive and critical review of the literature about coaching behavior.

The results underwent statistical analysis, specifically Pearson's Correlation. The personality traits: Openness and Neuroticism, and the seven dimensions of coaching behavior were correlated.

RESULTS AND DISCUSSION

The Personality Traits of Selected Student-Athletes of UST

Table 1 represents the personality traits of selected student-athletes. Openness scored the highest mean, with 3.64 on average. Item number 15 got the highest mean of 3.9, and it reads: "Is ingenious a deep thinker," while question number 35 reached the lowest mean with 2.72 and reads: "Prefers work that is routine." According to Tok (2011), high-risk sports practitioners tend to have a higher degree of openness and extraversion. Openness describes a person's outgoing behavior, whether they would accept new experiences unknown to them.

According to McCrae and Costa (2008), conscientiousness is described as a person's determination to reach their goals, dependability, and responsibility. Kovacs (2008) stated that conscientiousness and neuroticism have a direct correlation to athletic performance.

Table 3 shows the extraversion personality trait of a student-athlete. Item 11 got the highest rating of 4.02, and it reads: "Is full of energy," while question number 21 reached the lowest mean of 2.64, and it reads: "Tends to be quiet." According to Tok (2011), high-risk sports practitioners tend to have a higher degree of openness and extraversion. Openness describes a person's outgoing behavior, whether they would accept new experiences unknown to them.

Table 1: Mean and standard deviation of the personality traits of student-athletes: Openness

Questions	Mean	SD
5. Is original, comes up with new ideas	3.77	0.962478
10. Is curious about many different things	3.86	0.99514
15. Is ingenious, a deep thinker	3.9	0.881917
20. Has an active imagination	3.8	1.110101
25. Is inventive	3.44	0.99818
30. Values artistic, aesthetic experiences	3.79	1.056916
35. Prefers work that is routine	2.72	0.792388
40. Likes to reflect, play with ideas	3.86	0.943023
41. Has few artistic interests	3.73	1.003579
44. Is sophisticated in art, music, or literature	3.57	1.121462
GWM:	3.644	0.986518

Table 4 shows the agreeableness personality trait of a student-athlete item number 42 got the highest mean of 3.99. It reads: "Likes to cooperate with other," while question number 27 got the lowest mean of 3.06 and it reads "Can be cold and aloof." Piedmont (1998), an individual who is high in agreeableness, shows compassion for others and can get along easily. Someone low in agreeableness is typically uncaring, cynical, and selfish. Agreeableness is generally high among people who play sports due to its nature of playing against other people and other people in team sports. The value of teamwork and sportsmanship could lead to high agreeableness.

Costa and McCrae (2011) have stated that neuroticism is the person's sensitivity to mental stress. However, neuroticism is also a factor in how sensitive a person is to potential threats and harm. Furthermore, Kovacs (2008) reported that conscientiousness and neuroticism has a direct correlation with athletic performance.

Table 5 shows the neuroticism personality trait of a student-athlete. Item number 29 got the highest mean of 3.61, and it

Table 2: Mean and standard deviation of the personality traits of student a student-athletes: Conscientiousness

Questions	Mean	SD
3. Does a thorough job	3.75	0.845368
8. Can be somewhat careless	2.71	0.997927
13. Is a reliable worker	3.88	0.844232
18. Tends to be disorganized	3.08	1.051022
23. Tends to be lazy	2.92	1.107185
28. Perseveres until the task is finished	3.62	1.098943
33. Does things efficiently	3.43	0.819645
		0.81964
38. Makes plans and follows through with them	3.64	1.059064
43. Is easily distracted	2.9	1.176367
GWM:	3.325556	0.981939

Table 3: Mean and standard deviation of the personality traits of student-athletes: Extraversion

Questions	Mean	SD
1. Is talkative	3.57	1.103301
6. Is reserved	2.79	1.07586
11. Is full of energy	4.02	0.898708
16. Generates a lot of enthusiasm	3.7	0.948151
21. Tends to be quiet	2.64	1.0873
26. Has an assertive personality	3.41	0.943826
31. Is sometimes shy	2.76	0.944094
36. Is outgoing, sociable	3.29	0.844411
GWM:	3.2725	0.980706

reads: "Can be moody" while item number 9 got the lowest mean of 2.59 and reads: "Is relaxed, handles stress well." Costa and McCrae (2011) have stated that neuroticism is the person's sensitivity to mental stress. However, neuroticism is also a factor in how sensitive a person is to potential threats and harm. Furthermore, Kovacs (2008) reported that conscientiousness and neuroticism have a direct correlation with athletic performance.

The Sports Coaching behavior of UST Coaches as Perceived by the Athletes

Table 6 shows the physical training and planning of the coaching behavior scale. Item number 5 got the highest mean of 5.63, which reads "ensures that training facilities and equipment are organized." In contrast, question number 1 got the lowest mean of 5.35, which reads, "provides me with a physical conditioning program in which I am confident." According to Losch *et al.* (2016), the study shows that leadership makes a big difference in coaching methods and shows that coaching and training effectively enhance performance and emphasize the beneficial effects of coaching on clients' goal attainment.

Table 4: Mean and standard deviation of the personality traits of student-athletes: Agreeableness

Questions	Mean	SD
2. Tends to find fault with others	3.4	1.239094
7. Is helpful and unselfish with others	3.93	1.112418
12. Starts quarrels with others	3.42	1.24056
17. Has a forgiving nature	3.93	0.95616
22. Is generally trusting	3.84	0.971513
27. Can be cold and aloof	3.06	1.003227
32. Is considerate and kind to almost everyone	3.39	0.863339
37. Is sometimes rude to others	3	0.765414
42. Likes to cooperate with others	3.99	1.068323
GWM:	3.551111	1.02445

Table 5: Mean and standard deviation of the personality traits of student-athletes: Neuroticism

Questions	Mean	SD
4. Is depressed, blue	2.93	1.148165
9. Is relaxed, handles stress well	2.59	0.964993
14. Can be tense	3.56	0.879853
19. Worries a lot	3.54	1.09563
24. Is emotionally stable, not easily upset	2.69	0.981598
29. Can be moody	3.61	1.053086
34. Remains calm in tense situations	2.84	0.884433
39. Gets nervous easily	3.56	1.02809
GWM:	3.165	1.004481

Table 7 shows the technical skill of the coaching behavior scale. Item number 14 got the highest mean of 5.82, and it reads: "Makes sure I understand the techniques and strategies I'm being taught." On the other hand, items number 10 and 12 got the lowest mean of 5.65. These questions are "Gives me reinforcement about correct technique" and "Provides me with immediate feedback," respectively. According to Narwal, R. (2014), to ensure the correctness of executing the desired skill, allowing players to practice techniques at a slow, comfortable speed is better than practicing a poor technique fast. In that way, the coach is ensuring that the technique is successfully taught to the athlete.

Table 6: Mean and standard deviation of perceived coaching behavior: Physical training and planning

Questions	Mean	SD
1. Provides me with a physical conditioning program in which I am confident	5.35	1.54642
2. Provides me with a physically challenging conditioning program	5.45	1.465943
3. Provides me with a detailed physical conditioning program	5.42	1.498686
4. Provides me with a plan for my physical preparation	5.38	1.568503
5. Ensures that training facilities and equipment are organized	5.63	1.440083
6. Provides me with structured training sessions	5.37	1.618423
7. Provides me with an annual training program	5.37	1.548248
GWM:	5.424286	1.526615

Table 7: Mean and standard deviation of perceived coaching behavior: Technical skill

Questions	Mean	SD
8. provides me with advice while I'm performing a skill	5.6	1.470244
9. gives me specific feedback for correcting technical errors	5.67	1.491085
10. gives me reinforcement about correct technique	5.65	1.431076
11. provides visual examples to show how a skill should be done	5.76	1.41507
12. provides me with feedback that helps me improve my technique	5.79	1.409169
13. uses verbal examples that describe how a skill should be done	5.68	1.391751
14. makes sure I understand the techniques and strategies I'm being taught	5.82	1.343747
15. provides me with immediate feedback	5.65	1.424001
GWM:	5.7025	1.422018

Table 8 shows the mental preparation of the coaching behavior scale. Item number 19 got the highest mean of 5.7, and it reads: "Provides advice on how to stay positive about myself" while question number 16 got the lowest mean of 5.54 and it reads: "Provides advice on how to perform under pressure." The results align with the research of Côté *et al.* (2003), stating that the coach's methods of exuding confidence and consistency among the athletes directly influences the athlete's confidence.

Table 9 shows the goal setting of the coaching behavior scale. Item number 26 got the highest mean of 5.69 and, it reads: "Provides support to attain my goals," while item number 23 got the lowest mean of 5.41 and reads: "Helps me set short term goals." As Narwal, R. (2014) stated, when coaches are hands-on with their players, both the coach and the player will have strong communication. Having strong communication between players and coach shows that coaches will lead, direct, and manage the team better.

Table 10 shows the competition strategies of the coaching behavior scale. Item number 29 got the highest mean of 5.84 and, it reads "Keeps me focused in competitions" while item number 30 got the lowest mean of 5.71 and reads: "Has a consistent routine at the competition." Koh, K. T., Kawabata

Table 8: Mean and standard deviation of perceived coaching behavior: Mental preparation

Questions	Mean	SD
16. provides advice on how to perform under pressure	5.54	1.533597
17. provides advice on how to be mentally tough	5.66	1.364929
18. provides advice on how to stay confident about my abilities	5.5	1.547236
19. provides advice on how to stay positive about myself	5.7	1.366999
20. provides advice on how to stay focused	5.65	1.513408
GWM:	5.61	1.465234

Table 9: EAN and standard deviation of perceived coaching behavior: Goal setting

Questions	Mean	SD
21. helps me identify strategies to achieve my goals	5.64	1.494231
22. monitors my progress toward my goals	5.59	1.414892
23. helps me set-short term goals	5.41	1.457097
24. helps me identify target dates for attaining my goals	5.51	1.520865
25. helps me set long-term goals	5.61	1.496764
26. provides support to attain my goals	5.69	1.397653
GWM:	5.575	1.463584

and Mallett (2014), competition strategies show the coach if they have good communication with the athlete during competition.

Table 11 shows the positive rapport of the coaching behavior scale. Item number 34 got the highest mean of 5.69, and it reads: "Shows understanding for me as a person," while question number 36 got the lowest mean of 5.46 and it reads: "Is easily approachable about personal problems I might have." The results of Boyce *et al.* (2010) correspond relationship processes of rapport, trust, and commitment positively predicted coaching program outcomes, including client and coach reactions, behavioral change, and coaching program results.

Table 12 shows the negative rapport of the coaching behavior scale. Item number 41 got the highest mean of 5.11 and it reads: "Yells at me when angry." On the other hand, items number 44 and 45 got the lowest mean of 4.34. These questions are "Intimidates me physically" and "Uses power to manipulate me." Supporting this finding is a study by Kenow, L.J., and

Table 10: Mean and standard deviation of perceived coaching behavior: Competition strategies

Questions	Mean	SD
27. helps me focus on the process of performing well	5.73	1.406012
28. prepares me to face a variety of situations in competition	5.83	1.35628
29. keeps me focused in competitions	5.84	1.284877
30. has a consistent routine at competition	5.71	1.394759
31. deals with problems I may experience at competitions	5.8	1.333333
32. shows confidence in my ability during competitions	5.73	1.420307
33. ensures that facilities and equipment are organized for competition	5.82	1.402595
GWM:	5.78	1.371166

Table 11: Mean and standard deviation of perceived coaching behavior: Positive rapport

Questions	Mean	SD
34. shows understanding for me as a person	5.69	1.522193
35. is a good listener	5.58	1.670783
36. is easily approachable about personal problems I might have	5.46	1.690257
37. demonstrates concern for my whole self (i.e., other parts of my life than sport)	5.49	1.540661
38. is trustworthy with my problems	5.55	1.62291
39. maintains confidentiality regarding my personal life	5.55	1.578741

Williams, J.M. (1992) about evaluating coaching behaviors and the relationship between anxiety and self-confidence. The results gathered to say that the coach's sideline behavior, such as a foot-stomping and facial expressions after an athlete made an error, added to the player's anxiety. Furthermore, a study by Erickson *et al.* (2011) implied that negative behaviors can adversely affect the per athletes' performance.

The Significant Relationship of Personality and the Seven Dimensions of Perceived Coaching Behavior

The results shown in Table 13 presents the relationship of the openness personality trait to the seven dimensions of sports coaching behavior. The results show that the relationship is statistically significant. p-value is less than 0.01, except for negative rapport whose p-value is greater than 0.01 and therefore not significant.

According to Stein (2001), physical training could draw the athlete's attitudes and behaviors and make the student-athlete acquire a knowledge of skill for a specific purpose. Brown and McCracken (2010), physical training modifies the attitude

Table 12: Mean and standard deviation of perceived coaching behavior: Negative rapport

Questions	Mean	SD
40. uses fear in his/her coaching methods	4.99	1.755194
41. yells at me when angry	5.11	1.797276
42. disregards my opinion	4.58	2.030972
43. shows favoritism towards others	4.37	2.209507
44. intimidates me physically	4.34	2.137779
45. uses power to manipulate me	4.34	2.165944
46. makes personal comments to me that I find upsetting	4.54	2.208432
47. spends more time coaching the best athletes	4.88	2.180168
GWM:	4.64375	2.060659

Table 13: Relationship of openness to the seven dimensions of coaching behavior

Significant relationship of openness with	R	P	Decision	Remarks
Physical training and planning	0.500	0.000	Reject Ho	Significant
Technical skill	0.507	0.000	Reject Ho	Significant
Mental preparation	0.392	0.000	Reject Ho	Significant
Goal setting	0.476	0.000	Reject Ho	Significant
Competition strategies	0.454	0.000	Reject Ho	Significant
Positive rapport	0.303	0.002	Reject Ho	Significant
Negative rapport	0.100	0.324	Accept Ho	Not Significant

Significant if $P < 0.01$

Table 14: Relationship of neuroticism to the seven dimensions of coaching behavior

Significant relationship of neuroticism with	R	P	Decision	Remarks
Physical training and planning	0.129	0.202	Accept Ho	Not Significant
Technical skill	0.121	0.229	Accept Ho	Not Significant
Mental preparation	0.132	0.189	Accept Ho	Not Significant
Goal setting	0.133	0.188	Accept Ho	Not Significant
Competition strategies	0.148	0.141	Accept Ho	Not Significant
Positive rapport	0.145	0.151	Accept Ho	Not Significant
Negative rapport	-0.004	0.970	Accept Ho	Not Significant

Significant if $P < 0.01$

and behaviors of the athlete and it is also aligned with the organizational goals of the athlete.

Corresponding with this statement, a study with Côté and Sedgwick (2003) stating that by the coach's methods of exuding confidence and consistency among the athletes directly influences the athlete's confidence, meaning a coach's behavior may influence the athlete's personality. To further support this, Smoll and Smith (1989) stated that the effectiveness of the leader depends on the behaviors of the leader and the eyes of the beholder, giving the idea that personality, and perceived coaching behavior are linked to one another.

Moreover, a research by Narwal (2014) state that the more positive the athletes perceived their coaches' behaviors, the more positive their athletic experience was perceiving their coaches' behaviors in a positive light reinforces a positive athletic experience for the athletes. This highlights the fact that coaches should maintain positive attitudes toward their players so it can translate to the team.

The results shown in the Table 14 presents the relationship of the neuroticism personality trait to the seven dimensions of sports coaching behavior. The results show that the relationship is statistically insignificant, with P -value being greater than 0.01.

Corresponding with this statement, a study with Côté and Sedgwick (2003), stating that by the coach's methods of exuding confidence and consistency among the athletes directly influences the athlete's confidence, meaning a coach's behavior may affect the athlete's personality. This further implies that if the coach did not show enough negative behavior towards his athletes, it would translate to his less anxious athletes.

CONCLUSION AND RECOMMENDATION

First, the results gathered suggest that UST's selected student-athletes most toward the openness personality trait and least toward neuroticism. Second, the coaching behavior as perceived by student-athletes favors their coaches' competition strategies and least favor the coaches' negative rapport. Finally, there is a correlation between the student-athlete's openness personality trait and their perception of sports coaching behavior of their coaches except for the negative rapport that had no significant correlation. Concurrently, there is no significant relationship between the neuroticism personality trait and any perceived sports coaching behavior.

Based on the conclusions of the study, the first recommendation the study would recommend which is for the CBS-S to be used as a source of dialogue between the coach and other team members to complete other performance data of an athlete. Likewise, the administration of IPEA should consider using the CBS-S to evaluate their coaches' performance the same way students evaluate their professors. The second is for coaches to understand the importance and significance of psychological skills in training the athlete to adapt their technique better one such psychological factor to be considered is the personality of the student-athlete.

REFERENCES

1. Brinkman C. The Big Five Personality Model and Motivation in Sport; 2013.
2. Kavussanu M, Boardley ID, Jutkiewicz N, Vincent S, Ring C. Coaching efficacy and coaching effectiveness: Examining their predictors and comparing coaches' and athletes' reports. *Sport Psychol* 2008;22:383-404.
3. Brown TC, McCracken M. Which goals should participants set to enhance the transfer of learning from management development programmes? *J General Manag* 2010;35:27-44.
4. Boyce LA, Jackson RJ, Neal LJ. Building successful leadership coaching relationships: Examining impact of matching criteria in a leadership coaching program. *J Manag Dev* 2010;29:4231.
5. Côté J, Sedgwick WA. Effective behaviors of expert rowing coaches: A qualitative investigation of Canadian athletes and coaches. *Int Sports J* 2003;1:66-77.
6. Côté J, Yardley J, Baker J. Coach behaviors and athlete satisfaction in team and individual sports. *Int J Sport Psychol* 2003;34:226-39.
7. Côté J, Yardley J, Hay J, Sedgwick W, Baker J. An exploratory examination of the coaching behavior scale for sport. *Avant Res* 1999;5:82-92.
8. Costa PT, McCrae RR. The five-factor model, five-factor theory, and interpersonal psychology. In: *Handbook of Interpersonal Psychology: Theory, Research, Assessment, and Therapeutic Interventions*. New York: John Wiley and Sons; 2011. p. 91-104.
9. Erickson K, Côté J, Hollenstein T, Deakin J. Examining coach-

- athlete interactions using state space grids: An observational analysis in competitive youth sport. *Psychol Sport Exerc* 2011;12:645-54.
10. Falcão W, Caron J. Coaching High-performance Athletes: Implications for Coach Training. Hauppauge, New York: Nova Science Publisher; 2014. p. 107-32.
 11. Feltz DL, Chase MA, Moritz SE, Sullivan PJ. A conceptual model of coaching efficacy: Preliminary investigation and instrument development. *J Educ Psychol* 1999;91:765-76.
 12. Jain T, Sharma R, Singh A, Mehta K. The coaching behavior scale for sport (CBS-S): Factor structure examination for elite Indian sportsperson. *Indian J Positive Psychol* 2018;9:1-8.
 13. John OP, Srivastava S. The Big-five trait taxonomy: History, measurement, and theoretical perspectives. In: Pervin LA, John OP, editors. *Handbook of Personality: Theory and Research*. Vol. 2. New York: Guilford Press; 1999. p. 102-38.
 14. Losch S, Traut-Mattausch E, Mühlberger MD, Jonas E. Comparing the effectiveness of individual coaching, self-coaching, and group training: How leadership makes the difference. *Front Psychol* 2016;7:629.
 15. Kenow L, Williams JM. Coach-athlete compatibility and athlete's perception of coaching behaviors. *J Sport Behav* 1999;25:1-9.
 16. Koh KT, Kawabata M, Mallett CJ. The coaching behavior scale for sport: Factor structure examination for Singaporean youth athletes. *Int J Sports Sci Coaching* 2014;9:1311-24.
 17. Kovacs M. Relationship between personality and collegiate tennis rankings. *Med Sci Sport Exer* 2008;40:209-10.
 18. Narwal R. Effect of Coaching Behavior in Sports. Vol. 5; 2014.
 19. McCrae RR, Costa PT Jr. The five-factor theory of personality. In: John OP, Robins RW, Pervin LA, editors. *Handbook of Personality: Theory and Research*. New York: The Guilford Press; 2008. p. 159-81.
 20. Piedmont RL. *The revised NEO Personality Inventory: Clinical and research applications*. Berlin/Heidelberg: Springer Science and Business Media; 1998.
 21. Ramzaninezhad R, Keshtan M. The relationship between coach's leadership styles and team cohesion in Iran football clubs professional league. *Braz J Biom* 2009;3:111-20.
 22. Stein DS. Situated learning and planned training on the job. *Adv Dev Hum Resour* 2001;3:415-24.
 23. Tok S. The big five personality traits and risky sport participation. *Soc Behav Pers* 2011;39:1105-11.
 24. Teshome B, Mengitsu S, Beker G. The relationship between personality trait and sport performance: The case of national league football clubs in Jimma Town, Ethiopia. *J Tour Hosp Sports* 2016;11:25-32.
 25. Zielińska M, Zieliński J, Ciekot M. The personality of highly trained athletes in view of the big five model. *J Kinesiol Exerc Sci* 2015;72:29-34.



Research Article

Effect of different packages of yogic practices with roasted garlic intake on plasma glucose, self-esteem, and cortisol variables among men

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ABSTRACT

Introduction: The purpose of the study was to find out the effect of different packages of yogic practices on plasma glucose, self-esteem, and cortisol variables among men. **Selection of Variables:** The following variables were selected. 1. Dependant Variables: Plasma glucose, self-esteem, and cortisol, 2. independent variables-experimental group I – roasted garlic, experimental group II – roasted garlic with yogic package and control group. **Selection of Subjects:** Forty-five overweight middle aged men were randomly selected as subjects from Chennai. The subject’s age ranged between 40 and 50 years. The subjects were randomly divided into three groups such as experimental group I, experimental group II, and control group and each group contains fifteen subjects. **Experimental Design:** The study was formulated as a three random group design consisting of a pre-test and post-test. The middle-aged overweight men ($n = 45$) were randomly assigned to three equal groups of fifteen each. The groups were assigned as experimental group – I (Yogic practices), experimental group – II (Yogic practices with roasted garlic), and control group, respectively. Pre- and post-tests were conducted for all the 45 subjects on selected lipid profile status, physiological, and psychological variables before and after the experimental period of 12 weeks. The two experimental groups were treated with their respective yogic program for 1 h/day for 5 days a week for a period of 12 weeks. **Statistical Procedure:** Analysis of covariance statistical technique was used to test the adjusted post-test mean differences among the experimental groups and control group. If the adjusted post-test result was significant, then the Scheffe’s *post hoc* test was used to determine the significance of the paired mean differences (Thirumalaisamy, 1998). **Conclusions:** It was concluded that the plasma glucose and cortisol has significantly decreased and self-esteem has significantly increased due to the influence of 12 weeks practice of different packages of yogic practices with roasted garlic intake among men compared to the control group.

HEALTH BENEFITS OF GARLIC

Garlic has the unique ability to add great taste and flavor to any dish. Along with playing the role of increasing the flavor profile of a dish, garlic also comes with numerous health benefits. It is widely used for several conditions linked to the blood system and heart, including atherosclerosis (hardening of the arteries), high cholesterol, heart attack, coronary heart disease, and hypertension.

1. Roasting garlic concentrates the sugars, transforming it into a caramelized, spreadable, buttery texture, with

sweet, deep complex flavors, removing all the sharpness, pungency, and bite.

2. It’s easier to digest for many people.
3. It gives sweetness and depth to the dishes you are already making- soups stews, mashes, dressings, marinades, and sauces.
4. It is a great way to preserve garlic.
5. Because it smells amazing and will make you and your family feel cozy and happy.

Meaning of Yoga

Yoga is the “Union of the individual self with the universal self” (Iyengar, 2001). Yoga means the union or communication or unity with our inner being. “Asana” means a state of being in which we can remain steady, calm, quiet, and comfortable

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with our physical body and mind. 1. Yoga improves strength, balance, and flexibility. 2. Yoga helps with back pain relief. 3. Yoga can ease arthritis symptoms. 4. Yoga benefits heart health. 5. Yoga relaxes you, to help you sleep better. 6. Yoga can mean more energy and brighter moods. 7. Yoga helps you manage stress. 8. Yoga connects you with a supportive community. 9. Yoga promotes better self-care.

Benefits of Yogic Practices

Many world class sportsmen have found that the practice of yoga helps them to achieve greater skills in their sports. This is because yoga not only works on the physical level but also has benefits for the mental, emotional, and energy levels. It enables them to realize that “winning is not everything” and that there is “more to life” than sporting “high” and “lows.”

1. Yoga helps to develop all system of human body such as cardiovascular, respiratory, digestive, excretory, endocrine, nervous, and muscle-skeletal system thus strengthening, cleansing and purifying the body so that it is brought under our conscious will.
2. Yoga reduces anxiety, aggression, tension, ego weakness, guilt feelings, and frustration. It brings complete changes in body and mind so that the practitioner feels fresh remarkably, relaxed, and full of vitality.
3. Lung functions can be improved as a result of yogic exercise. Yoga is also useful for improving the breath holding time.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of different packages of yogic practices with garlic intake on plasma glucose, self-esteem, and cortisol variables among men.

Selection of Variables

The following variables were selected. 1. Dependent variables: Plasma glucose, self-esteem and cortisol, independent variables – 1. experimental group I – yogic package, 2. experimental group II – yogic package with roasted garlic intake Group III – Control group.

Experimental Design

The study was formulated as a true random group design consisting of a pre-test and post-test. The middle aged overweight men ($n = 45$) were randomly assigned to three equal groups of 15 each. The groups were assigned as experimental group – I (Yogic practices Yogic package), experimental group – II (Yogic practices with roasted garlic), and control group respectively. Pre- and post-tests were conducted for all the 45 subjects on plasma glucose, self-esteem, and cortisol variables before and after the experimental period of 12 weeks. The two experimental groups were treated with their respective yogic program for 1 h/day for 5 days a week for a period of twelve weeks.

Statistical Procedure

Analysis of covariance statistical technique was used to test the adjusted post-test mean differences among the experimental groups and control group. If the adjusted post-test result was significant, then the Scheffe’s *post hoc* test was used to determine the significance of the paired mean differences (Thirumalaisamy, 1998).

DISCUSSION ON THE FINDINGS OF PLASMA GLUCOSE

From these analyses, it was found that the results obtained from the experimental groups had significant decreases in the plasma glucose from it higher level to moderate when compared with one from the control group. This was due to the influence of different packages of yogic practices with roasted garlic intake in the analysis of experimental groups. It was interesting to note that the results obtained from experimental group II had more significant effect than experimental group I and control group on the decreased plasma glucose.

DISCUSSION ON THE FINDINGS OF SELF-ESTEEM

From these analyses, it was found that the results obtained from the experimental groups had significant increases in the self-esteem from it low level to high level when compared

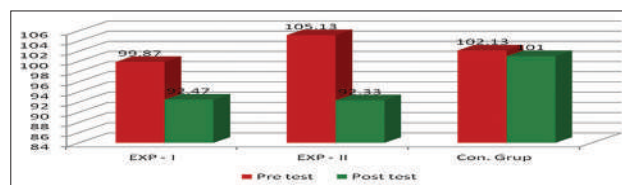


Figure 1: Final mean difference of plasma glucose

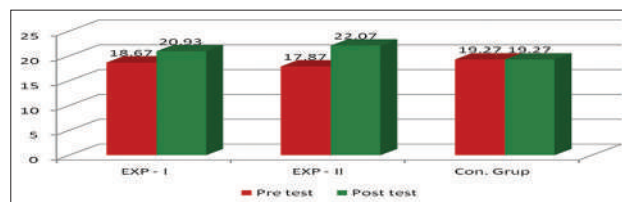


Figure 2: Final mean difference of self-esteem

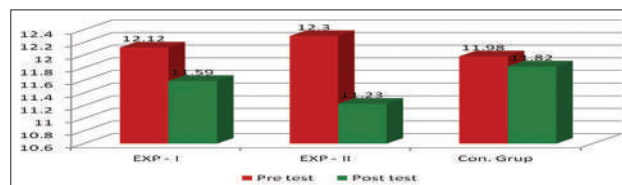


Figure 3: Final mean difference of cortisol

Table 1: Computation of analysis of covariance on plasma glucose

Means	Exp. Group I	Exp. Group II	Control Group	SV	SS	df	MS	'F'
Pre-test	99.87	105.13	102.13	B	244.04	2	122.02	1.03
				W	4959.20	42	118.08	
Post-test	92.47	92.33	101	B	739.73	2	369.87	4.05*
				W	3839.07	42	91.41	
Adjusted post-test	94.56	89.94	101.30	B	967.53	2	483.77	27.45*
				W	722.67	41	17.63	

Table 2: Computation of analysis of covariance on self-esteem

Means	Exp. Group I	Exp. Group II	Control Group	SV	SS	df	MS	'F'
Pre-test	18.67	17.87	19.27	B	14.80	2	7.40	1.13
				W	276	42	6.57	
Post-test	20.93	22.07	19.67	B	43.24	2	21.62	4.75*
				W	191.20	42	4.55	
Adj. post-test	20.89	22.53	19.24	B	77.01	2	38.50	19.71*
				W	80.07	41	1.95	

Table 3: Computation of analysis of covariance on cortisol

Means	Exp. Group I	Exp. Group II	Control Group	SV	SS	df	MS	O'F'
Pre-test	12.12	12.30	11.98	B	0.77	2	0.39	1.01
				W	16.13	42	0.38	
Post-test	11.59	11.23	11.82	B	2.63	2	1.31	4.65*
				W	11.85	42	0.28	
Adj. post test	11.60	11.12	11.93	B	4.76	2	2.38	24.36*
				W	4	41	0.10	

with one from the control group. This was due to the influence of different packages of yogic practices in the analysis of experimental groups. It was interesting to note that the results obtained from experimental group II had more significant effect than experimental group I and control group on the increased self-esteem.

The findings of Hamid *et al.* (2014) investigated that the effect of yoga training was significantly altered stress and self-esteem and its relation to emotional intelligence.

FINDINGS OF CORTISOL

From these analyses, it was found that the results obtained from the experimental groups had significant decreases in the cortisol from its higher level to moderate when compared with one from the control group. This was due to the influence of different packages of yogic practices in the analysis of experimental groups. It was interesting to note that the results obtained from experimental group II had more significant effect than experimental group I and control group on the decreased cortisol.

These results were found to be in a good agreement with the earlier works done by different researchers. The findings of Schell *et al.* (1994) conducted a study on physiological and psychological effects of Hatha-Yoga exercise was significant changes on cortisol in healthy men.

CONCLUSIONS

Within the limitations and delimitations set for the present study and considering the results obtained, the following conclusions were drawn: It was concluded that experimental group II (roasted garlic with yogic practice) the plasma glucose, cortisol was reduced and greater increased in self-esteem than that of experimental group I and control group due to the influence of 12 weeks practice of different packages of yogic practices with roasted garlic among men compared to the control.

REFERENCES

1. Sivananda Yoga Vendanta Centre. Yoga mind and Body. Montreal, Canada: Dorling Kindersley Ltd.; 1996. p. 6-7.

2. Thirumalaisamy R. Statistics in Physical Education. Karakudi: Senthil Kumar Publisher; 1995. p. 108-12.
3. Turner. Personal and Community Health. St. Louis: The C. V. Mosby Company; 1971. p. 10.
4. Grana WA, Kalena A. Clinical Sports medicine. 1st ed. Philadelphia, PA: W. B. Saunders; 1991.
5. Wilmore JH. Athletic Training and Physical Fitness. 2nd ed. Boston: Allyn and Bacon-Inc.; 1977. p. 102.



Research Article

Aqua aerobics – fitness with fun

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ABSTRACT

Aqua aerobics (waterobics, aquarobics, aquatic fitness, aquafitness, and aquafit) are the performance of aerobic exercise in water such as in a swimming pool. Done mostly vertically and without swimming typically in waist deep or deeper water, it is a type of resistance training. Water aerobics are a form of aerobic exercise that requires water-immersed participants. The most water aerobics is in a group fitness class setting with a trained professional teaching for about an hour. The classes focus on aerobic endurance, resistance training, and creating an enjoyable atmosphere with music. Different forms of water aerobics include: Aqua Zumba, water yoga, aqua aerobics, aqua jog, and aqua cycling. While similar to land aerobics, in that, it focuses on cardiac training, water aerobics differ in that, it adds the component of water resistance and buoyancy. Although heart rate does not increase as much as in land-based aerobics, the heart is working just as hard and underwater exercise actually pumps more blood to the heart. Exercising in the water is not only aerobic, but also strength-training oriented due to the water resistance. Moving our body through the water creates a resistance that will activate muscle groups. The average calorie burn for an hour of aqua fit is anywhere from 400 to 500 calories. The number of calories we burn during an aqua fit is actually up to us. If we try to perform various exercises at a slightly higher level of intensity, we will burn more calories. Similarly, we will burn fewer calories if we decide to take it slow.

INTRODUCTION

Aerobic Exercise

Aerobic exercise is any physical activity that makes us sweat, causes us to breathe harder, and gets our heart beating faster than at rest. It strengthens our heart and lungs and trains our cardiovascular system to manage and deliver oxygen more quickly and efficiently throughout our body. Aerobic exercise uses our large muscle groups, is rhythmic in nature, and can be maintained continuously for at least 10 min.

Aqua Aerobics

If we take up aqua aerobics, not only do we shape our body in a much more efficient way but also energize our mind. Aqua aerobic is impact free that's great for bone density and helps in toning up muscles we would not usually use. This aerobic is great to boost our strength and flexibility.

Water aerobics are easy on the joints. This means that it is good for people who suffer from arthritis or additional mobility problems. The low-impact nature of this exercise means that this type of aerobics is a good option for people who are struggling with losing weight. Combining aqua aerobics with strength and conditioning moves, a workout in the water will get our heart pumping without putting pressure on joints.

The buoyancy factor provides support for the body, thereby reducing the likelihood of muscle, bone, and joint injuries. Buoyancy is the ability of water to support a body's weight. Because of less gravity, joints can easily be moved through the full range of motion without excess joint stress helping to improve flexibility.

Aqua Aerobics Class will Include

- A short warm-up to get your body used to the water and your muscles ready for exercise
- Cardiovascular exercises to get your heart pumping, such as jogging, leg kicks, body twists, arm stretches, and other dance-like movements
- Balancing exercises

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- Coordination exercises
- Stretches
- A cool-down at the end to avoid injury.

Some aqua aerobics classes may incorporate props in their workouts. These could include webbed gloves, ankle weights, or dumbbells for added resistance, and floats for buoyancy. A water aerobics class typically lasts an hour. An instructor will lead us through a series of moves, often set to music to keep us motivated. Each water aerobics class includes a warm-up, cardio and strength-training exercises, and a cool down. Expect exercises such as water walking, bicep curls, leg lifts, and kickboard moves.

The buoyancy of the water is easy on our joints. That makes water aerobics a good choice if we have joint problems, chronic pain, or recovering from injury. It is also popular among seniors and pregnant women. Although it is low-impact, we can make the workout harder. For example, do more repetitions of each move or go faster during the workout.

For Sports Person

Water is not just for rehab. It is also a viable option for plyometric strength training for athletes. Aquatic therapy is as effective as traditional, land-based weight training, and it opens athletes up to a variety of new exercises to enhance their performance.

Water provides resistance and allows athletes to work different muscle groups by improving overall flexibility and strength. A well-crafted water strength program may be just the thing to change up an athlete's routine. Many professional football players and other athletes have turned to aquatic training as a way to supplement their workouts and increase both aerobic capacity and strength. Aquatic workouts also tend to be low-impact, so recovery times can potentially be shorter between workouts, depending on the athlete.



Cristiano Ronaldo is doing workout in the pool, he installed a treadmill in his swimming pool



Melis Edwards, MS, ACSM-EP has more than 30 years of experience as a running and triathlon coach, personal trainer, fitness instructor, and athlete, having participated in Ironman distance triathlons. Ms. Edwards holds a master's degree in Health Promotion (Montana State University), a bachelor's degree in Health Education (San Diego State University), numerous training certifications, and is an author of an aquatic exercise book titled *Deep End of the Pool Workouts: No-Impact Interval Training and Strength Exercises*. She said,

“In my career teaching AE and land-based training and coaching, I have had the amazing opportunity to work with professional athletes; from hockey to football to tennis, as well as individuals most considered for AE. These athletes typically arrive in the waters due to specific injuries and have been prescribed water training to keep or ameliorate their fitness while in rehab. However, the excellent byproduct of this work was that these athletes learned that they could actually train for their sport in water as well. Over the years, I have seen every person, including athletes, feel stronger, fitter, and faster once they are back in their regular land-based training. Water is a very unique training medium, allowing for little to no joint trauma, higher cardiac output (due to the hydrostatic pressure), increased blood flow, and more.”

Exercise and therapy are far less painful in warm water than on land. Water provides low-impact and low-weight bearing exercise that allows the synovial fluid to bring nutrients to the joint surfaces and minimizes the risk of injury or undue stress on the joints. It reduces the foot-striking forces that so often muscles, ligaments, tendons, and bones, lessening the burden on the body. Aquatic exercise is effective for anyone wanting to build lean muscle mass, increase strength, or heal from injury. It is also the ideal exercise medium for aging adults by helping them maintain their good health at a comfortable and functional level.

TO GET THE MOST OF YOUR WATER WORKOUT, FOLLOW THESE TIPS

- Do not go in deeper than waist-high. That way our feet will have good contact with the pool floor and our leg muscles will be able to support some of our weight. Wear water shoes to improve traction and webbed gloves to add resistance and intensity to arm movements.
- Drink lots of water during and after workout: We can get dehydrated in the pool as easily as we can on land. One of the easiest and most effective pool workouts is water jogging. At a high intensity, we will burn 17 calories/min— more than on land. It also makes us stronger.

AQUA CYCLING

We have heard of aqua aerobics, but the concept of aqua cycling was a new one to us. It is a great way to burn those calories

and tone up our body in a fun, new way. We can burn up to 800 calories. Aqua cycling is a total-body, results-driven workout that's so much more than pedaling our legs underwater. This program will have cycling, rebounding, stabilizing, stretching, challenging our stamina, and building endurance. It is a total fitness solution.



The primary focus of water-based exercises is the legs, which contain the largest muscle mass. Moves include kicks, leg extensions, knee lifts, squats, marching, and jogging. The first few sessions in any workout generally focus on the moves, proper form, and breathing techniques. As the participant becomes more familiar with the class and instructor, they will be able to increase the intensity of the workout. Start moves slowly and then gradually pick up speed.

Exercises should not be too complex especially for beginners. Demonstrate moves, especially proper weight transfer on deck so it is visible to the participants. Conducting the majority of the class from the deck has two advantages. Primarily, it allows the participants to see and hear us clearly. Second, it provides the instructor with a better view of the participants for safety concerns. Have the participants spread out. For water-based exercises, a larger area of about an eight foot circle (4 feet radius) is needed to accommodate drifting and shifting in the water as well as extended kicks.

A typical class should last about 50–60 min with a 5–10 min warm up and a similar cool down and stretching period. This will provide a full 30 min cardio training period. The class should begin with simple moves to allow the participants to become accustomed to the buoyancy of the water.

BENEFITS OF AQUA AEROBICS

Increase Muscle Strength

Water flows in multiple directions, the resistance in the pool can range from 4 to 42 times greater than air, ensuring the body's muscles get a rigid workout. In fact, a study conducted in 2007 found that after 12 weeks of regular aquatic aerobic exercise, participants had made significant gains in strength, flexibility, and agility.

Build Endurance

Unlike traditional weights, which require the human body to push and pull against the weight plus gravity, water resistance

is a more natural resistance which requires the body to strain through the water rather than against it.

Increases Flexibility

As the body is subject to water resistance during water aerobic exercise which requires movement in various directions while adjusting to the push and pull of water, the joints naturally increase their range of motion. A study conducted in 2013 found a significant increase in flexibility after subjecting a group of older adults to aerobic therapy exercise.

Low-Impact Exercise

In water aerobics, the buoyancy of the water helps take off some of the impact, we tend to place on our body, due to our own water weight. Our body is not subject to gravity in the water, therefore, the impact that our joints take on when running in water is not equal to the impact when running on land. This is particularly appealing to those with joint conditions such as arthritis or those currently undergoing physical rehabilitation.

Alleviates Pressure on the Joints

Studies have shown water-based exercises such as water aerobics relieve pressure placed on joints from normal wear-and-tear and arthritis. In fact, hydrotherapy is shown to be the leading form of therapy for those suffering from joint problems.

Relieves Stress and Decreases Anxiety

Watching bodies of water in motion can be one of the most soothing activities; one can take part in to help relieve stress. A study conducted in 2007 found that aquatic exercise significantly decreased anxiety and negative mood states in women.

Burns Calories

The combination of strength and cardio workouts mixed with water resistance in aquatic exercise ensures that the body is getting a full workout. Depending on cardio activity, weight (including additional weights such as dumbbells and weight belts), water temperature, volume and buoyancy, the body can burn between 400 and 500 calories in an hour of exercise.

Reduces Blood Pressure

Water resistance is not just a buoyancy feature to help work the muscles. In fact, the water pressure actually works with our blood as well and enables one's blood flow to circulate more effectively throughout the body, effectively decreasing blood pressure and, in the long run, decreasing resting heart rate. This benefit means that our heart is maintaining its productivity while putting less stress on our heart.

Cooling Exercise

Water aerobics can satisfy that need to feel cool in warmer temperatures while still enabling an athlete to exercise. It is

cool, crisp, and refreshing, especially knowing you are not struggling in the heat.

Popular Activity

Water aerobics are not limited to any age group or skill level. As a result, water aerobics are known to be one of the most popular bonding activities for friends and family. The sport appeals to all ages – with younger generations naturally enjoying the fun to be had in swimming pools while still appealing to the older generations and their need to maintain a moderate level of physical fitness.

EQUIPMENT

Water Barbells (Aqua Blocks)

Small foam barbells, which increase the resistance as we move our arms through the water.

Aqua Step

Used to perform step aerobics in the water using a special non-skid surface.

Flotation Belts

Attached to waist to provide additional buoyancy allowing us to increase our range of motion and work more muscles.

Gyro Joggers

Two foam rubber circles worn on the wrists or feet to increase water resistance.

Hand Webs

Webbed gloves used to increase water resistance.

Kickboards

Used to provide extra buoyancy allowing us to increase our range of motion and work more muscles.

Water Noodles (Woggles)

Are long cylinders of foam that can provide increased buoyancy and increased resistance.



RESULTS

According to Robert P. Cusick, ‘PMD of Kansas Joint and Spine Institute, “the patients enjoy going to therapy. They do not dread that, they do not cancel, and they do not skip appointments. In fact, the opposite is true, they want to go more than they are allowed to. In fact, they dislike it when they have graduated from therapy. Hence, they become functional faster and they enjoy [rehab] so much more with aquatic therapy.”

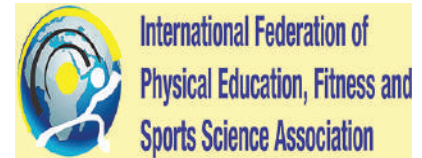
Travis Baughman, Clinic Director and Physical Therapist at Drayer Physical Therapy in Mechanicsburg, PA, states, “Less stress on the joints is one of the main reasons; we use water therapy for our senior patients. With water, you are able to unload those joints yet continually strengthen because the water is always causing some type of resistance. As the joints move, more [synovial] fluid flushes the joints and it feels better for the patient. We see a lot of patients who have pain and discomfort and it is difficult for them to progress on land.”

WATER AEROBICS SAFETY

Consult your doctor before starting water aerobics, especially if you have a pre-existing health condition or injury. Make your workout gradually progressive. Go at your own pace and, as your physical fitness improves, slowly pick up your pace to increase the intensity. Beginners can start in waist-level water, and intermediate exercisers can do aerobics in chest-level water. If you are at an advanced fitness level, exercise in deep water where your feet do not touch the bottom. You can wear a flotation belt in deep water. Wear water shoes for added traction and use ear plugs, goggles, and a water cap to keep chlorinated water out of your ears, eyes, and hair.

REFERENCES

1. Available form: <https://www.livehealthy.chron.com/meaning-aerobic-dance-4905.html>
2. Available form: <https://www.livehealthy.chron.com/high-impact-aerobics-dance-workouts-2386.html>
3. Available form: <https://www.uwhealth.org/exercise-fitness-aquatic/class-spotlight-aqua-dance/41456>
4. Available form: <https://www.experiencelife.com/article/a-strength-building-water-workout>
5. Available form: <https://www.study.com/academy/lesson/what-is-aerobic-exercise-definition-benefits-examples.html>
6. Available form: <http://www.thesportjournal.org/article/psychological-and-physiological-effects-of-aquatic-exercise-program-among-the-elderly>
7. Available form: https://www.en.wikipedia.org/wiki/Water_aerobics



Research Article

Folk games: Preservation of Catandungan's identity

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ABSTRACT

This research aimed to collect and document folk games in the 63 barangays in the Municipality of Virac, Catanduanes. Specifically, it answers questions to the profile of senior citizens, the folk games in the 63 barangays in terms of: Title, materials needed, player composition, values, objectives, and mechanics of the games and the primer on the folk Games of catanduanes that can be developed as a cultural and physical education resource material to ensure its preservation. Descriptive qualitative type of research was utilized since this study described and documented data on the Catanduanes folk games. The interview revealed 24 games as identified by the 76 senior respondents. The nature of these games was defined according to the title, materials needed, player composition, values, objectives, and mechanics of the games. The materials of the games depend on the location from where the player can gather. Furthermore, cultural values were distinctly seen in these games such as cooperation, commitment, resourcefulness, determination, honesty, social responsibility, and respect. Finally, objectives in the games were also drawn such as to develop accuracy, speed, agility, balance, strength, alertness, concentration, coordination, endurance, focus, flexibility, and speed.

Keywords: Catanduanes, Folk games, Matsob, Miming kokoy, Preservation, Primer, Suksok dagom, Sungkit goma, Tumbalata

INTRODUCTION

Man as a social organism is capable of ways of creating to interact with other individuals with the purpose of fulfilling the need to be accepted and belong to a group. There are several ways for him to be in contact with the people around through rituals, celebrations, occupations, etc. Rituals became one of activities during the primitive period to appease him to the things that cannot be explained. These rituals are accompanied with expressions of dances, music, and even games to make the activity more fun and enjoyable. Festivals are always marked with games that add to the merriment of the activities. Each tribe created their own games as expression of their feelings, resources, power, and environment even religion. Hence, games have been present since the early beginnings of man and some of these are still played at present times.

However, games may not refer to those that are only performed during special activities. These may also include the activities

played leisurely by people to pass away the time, to break the monotony of work or for other purposes. It can be observed that with the advent of computers, the present generation has forgotten old age traditional games. Some of these disappeared because these were not observed and some had regarded that this is as not a fad. The elders tasked to introduce this to young generation are also hooked on computers just like the younger generations. This scenario can be observed not only in local but also in the national level. The disappearance of indigenous games brings a gap of the present to our past, and our roots. Games can be considered as ordinary man's activity but these carry rich cultural symbols, from its properties, actors, rules, and the conduct of the games. Games carrying symbols and meaning which can be clearly understood by the people involved in the game. A lot of cultural values that can be seen from the games will be lost if this will be forgotten and a great loss in understanding the Bikolano.

METHODS

The study utilized the descriptive qualitative type of research using questionnaire and in-depth interview schedules as the

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main tools in gathering data. The interviews were done using Bikol dialect. Photo and video documentations were taken to corroborate with the actual observation. Descriptive qualitative type of research was utilized since this study described and documented data on the Catanduanes Folk Games. Descriptive qualitative type of research according to Pacific Rim Int J Nurs Resis an approach that is very useful when researchers want to know regarding events, who were involved, what was involved, and where did things take place.

The data were obtained from both the primary and secondary sources. The primary sources of data are the responses to the questionnaire and the interview checklist administered to the respondents. Photo and video documentations were taken to corroborate with the actual observation, while children were playing the said folk games. Secondary data were also collated for the analysis. Other secondary sources of data included the theses, dissertations, books, and articles as well as materials in the internet. In this study, folk games: Preservation of Catandungan's identity, the researcher focused on the 63 barangays of Municipality of Virac since it is the capital of the province.

The respondents were chosen through purposive sampling, a design based on choosing individuals as samples according to the purposes of the researcher as his control as stated by Bernaldez. The respondents in this research are the 76 selected senior citizens from the 63 barangays of Municipality of Virac for they can still interpret and recognize the games.

In the discussion of the games, the researcher has to describe the setting, people, topography, climate, occupation, etc. which will have a bearing to the games that will be gathered in the place. The setting and the indigenous materials that can be found in the place can be the materials that might be used in the games. During the actual observation, the researcher utilized photo and video documentation through phones to determine the rules of the games and the documented games are then converted into mp4 files and burned to CD-rewritable for utilization and packaging. The researcher also made a primer in English and Filipino version into a booklet form and presented it into the panel.

Before the distribution of the questionnaires to the target respondents, the researcher asked permission to conduct and distribute questionnaires of the study from the Local Government Unit and Barangay Captains. Afterward, the researcher classified, analyzed, interpreted, and presented the data results in quantitative form. Then, the research output was prepared, finalized, and presented to the panel of examiners of the BU graduate school.

In the analysis and interpretation of the data, the frequency, percentage, and weighted mean were used. The frequency was used to determine the number of respondents who rated the items in the questionnaire. This was done by one-on-one counting.

Percentage was used to express how large or small quantity is relative to another quantity. This was done by expressing a number as a fraction of 100 (percent meaning "per hundred") and denoted using the percent sign, "%." This was used to answer the profile of the respondents and the player composition of Catanduanes folk games.

RESULTS

Based on the gathered data, the researcher came up with the following findings:

Profile of Senior Citizens

The ages of the senior citizen respondents are 60–65, this means that the respondents are at the starting age of being a senior citizen. The gender of senior citizen respondents is female, the most of the respondents are female in the study. The years living in the area is 61–80 years, this means that most of the respondents lived in that certain area for 61–80 years are very particular with the folk games that are stated in the study.

The seniors of the community possessed stock knowledge on the traditional practices of the locality especially in their years living in the area. They are native in the place where the game is played and played the game in the significant periods of time. Virac, Catanduanes had several willing individuals who took part in the interview. The respondents identified 24 games, which they had either played or only had head knowledge about; nevertheless, they all understood the mechanics of the games.

Folk Games in Virac Catanduanes

The most frequently played game by male senior citizens during their childhood days was the games Tagu-Taguan, Tatsi, Tubig-Tubigan, and Tumba-lata—which are all physical games. Physical games demand strong limbs, fleetness of foot, fortitude, and vitality in addition to courage (*tapang*) and endurance (*pagtitiis*). It also involves energetic motor movements, bodily strength, and endurance. This means that men are more prone to physical games.

The most frequently played game among female senior citizens during their childhood days was the game Sungka. In Kerala, sungka is called Pallanguli in which designed to target young children and hold people to help improve their hand-eye coordination and to learn to count.

DISCUSSION/CONCLUSIONS

Profile of Senior Citizens

The respondents of the study were comprised of 76 senior citizens of Virac, Catanduanes. The respondents were grouped according to their age, sex, and the number of years living in the area.

Table 1 showed the profile of the respondents according to their age, gender, and years living in the area.

Age

As shown in the Table, 29% or 22 out of 76 senior citizen respondents are of the age range 60–65. About 26% or 20 out of 76 senior citizen respondents are of the age range 66–70. About 17% or 13 out of 76 senior citizen respondents are of the age range 71–75. About 13% or ten out of 76 senior citizen respondents are of the age range 76–80. About 8% or six out of 76 senior citizen respondents are of the age range 81–85. About 3% or two out of 76 senior citizen respondents are of the age range 86–90. About 4% or three out of 76 senior citizen respondents are of the age range 91–100. This means that most of the respondents are at the starting age of being a senior citizen who has still knowledge and information in giving the nature of the games. Some games were modified and developed.

Gender

In terms of the gender of the respondents, 75% or 57 out of 76 senior citizen respondents are female. About 25% or 19 out of 76 senior citizen respondents are male. This means that female has the number of known folk games and played the game in the significant periods of time.

Years living in the area

In terms of the number of years living in the area, 13% or ten out of 76 senior citizen respondents answered 1–20 years. About 14% or 11 out of 76 senior citizen answered 21–40 years. About 17% or 13 out of 76 senior citizen respondents' answered 41–60. About 41% or 31 out of 76 senior citizen respondents answered 61–80. About 4% or three out of 76 senior citizen respondents answered 81–100. About 11% or eight out of 76 Senior citizen respondents did not state their answer. This means that most of the respondents lived in that certain area for 61–80 years and are very particular with the folk games that are stated in the study.

The senior of the community possessed stock knowledge on the traditional practices of the locality especially in their years living in the area. They are native in the place where the game is played and played the game in the significant periods of time. Virac, Catanduanes had several willing individuals who took part in the interview. The respondents identified 24 games, which they had either played or only had head knowledge about; nevertheless, they all understood the mechanics of the games.

Table 2 revealed the folk games played by male and female senior citizens of Virac, Catanduanes.

As shown in Table, the most frequently played game by male senior citizens during their childhood days were the games

Table 1: Profile of respondents

Profile	Frequency	Percentage
Age		
60–65	22	29
66–70	20	26
71–75	13	17
76–80	10	13
81–85	6	8
86–90	2	3
91–100	3	4
Total	76	100
Gender		
Female	57	75
Male	19	25
Total	76	100
Years Living in the Area		
1–20	10	13
21–40	11	14
41–60	13	17
61–80	31	41
81–100	3	4
Not stated	8	11
Total	76	100

Tagu-Taguan, Tatsi, Tubig-Tubigan, and Tumba-lata—which are all physical games. Physical games demand strong limbs, fleetness of foot, fortitude, and vitality in addition to courage (*tapang*) and endurance (*pagtitiis*). It also involves energetic motor movements, bodily strength, and endurance. In bicol, copra processing and abaca stripping are generally done by hand. Bicolano men are expected to assume the role of becoming the primary source of income and financial support of his family, hence, need the body strength and endurance. With these different activities, viracnon is practicing games which build their muscular physique and involve in physical games.

The most frequently played game among female senior citizens during their childhood days was the game Sungka. In Kerala, sungka is called Pallanguli in which designed to target young children and hold people to help improve their hand-eye coordination and to learn to count.

As shown in Table, the top 1 most known folk games in Virac, Catanduanes was the game *Tagu-Taguan* which is comprised of 73 responses. *Tagu-taguan* [Figure 1] was played on moonlit nights where players (can be individual or team) hide in the shadows. An “it” try to tag them and race to the safe point. Winning is based on the ability to hide and run to avoid being

Table 2: Folk Games Played by Senior Citizens in Virac, Catanduanes

Games	Male		Female		Total	
	F	%	F	%	F	%
Bingkay	14	73.68	40	67.80	54	69.23
Bungkang	1	5.26	8	13.56	9	11.54
Kadang-Kadang	6	31.58	15	25.42	21	26.92
LuksosaButong	8	42.11	22	37.29	30	38.46
LuksongLubid	11	57.89	50	84.75	62	79.49
Matsob (Marble Game)	2	10.53	5	8.47	7	8.97
Miming-Kokoy	6	31.58	21	35.59	27	34.62
Olo-Ilago (Tug of War)	11	57.89	19	32.20	30	38.46
Palmo	6	31.58	8	13.56	14	17.95
Palpal	14	73.68	19	32.20	33	42.31
Payag-Payagan	17	89.47	46	77.97	64	82.05
Pikot-Bado (hopscotch)	7	36.84	38	64.41	45	57.69
Salbatana	13	68.42	17	28.81	30	38.46
Siato/Siatong/Pilpig	12	63.16	32	54.24	45	57.69
Simpanan	7	36.84	10	16.95	17	21.79
SuksokDagom	3	15.79	14	23.73	17	21.79
Sungka	15	78.95	55	93.22	71	91.03
Sungkit-Goma	13	68.42	32	54.24	45	57.69
Tagu-Taguan	18	94.74	54	91.53	73	93.59
Tatsi	18	94.74	30	50.85	48	61.54
Taytayan	2	10.53	7	11.86	9	11.54
Tigpanaw (Stilt Race)	14	73.68	25	42.37	39	50
Tubig-Tubigan	18	94.74	46	77.97	65	83.33
Tumba-lata (Knock down the can)	18	94.74	46	77.97	65	83.33

tagged. *Sungka* has 71 responses and the top 2 most known played in the municipality of Virac.

In *Sungka* [Figure 2] the players use a *sunkaan* – an elongated/oblong game board with ten shallow holes on each side of the board and a big one at each end which they called as the mother house or *payo*. Two players try to beat each other in taking the opponent's stones when one ends up with each cycle of dropping one stone in each hole and finishing opposite a hole filled with the opponent's stones. The player takes the stones and places them in his head hole or mother house. The winner has the most number of stones. Winning consists of being able to get all stones to one's big hole and making the opponent lose all his pebbles/cowrie shells and his side of the *sunkaan* empty. The top 3 most known folk games in Virac are the *Tubig-Tubigan* and *Tumbalata* (Knock down the can) with both having 65 responses.

Tubig-tubigan [Figure 3] was originally played on moonlit night on the streets. Lines are made by pouring water forming



Figure 1: Tagu-taguan develops individual's agility, alertness, and speed



Figure 2: Players while playing Sungka



Figure 3: Tubig-tubigan develops the agility and speed of individual

big squares. Whose teams take turns in trying to pass by the lines guarded by members of the opposing team who try to tug them. The skill of keeping the legs touching the lines bent away from the hands of the guards make teams win. In this game, the players will develop their smartness, body kinesthetic, and value the significance. In *Tumbalata* [Figure 4], players are trying to hit a can with a stone on top. The "it" tries to catch the players when they try to retrieve their stone used to bit the can. The technique is to hit the can as far as possible to give

time for the players to ran and gets his stone. In *tumbalata*, the players will develop their sportsmanship, alertness of body and mind, patience, develop strategies, and build teamwork.

This means that most of the respondents have known and played the games Tagu-Taguan, Sungka, Tubig-Tubigan, and Tumbalata during their childhood days. Meanwhile, the least known game among the respondents was the game. *Matsob*. *Matsob* [Figure 5] is a game of marbles flicked to roll to a shallow hole on the ground. Winning is based on the skill to avoid the penalties while trying to roll the marble to a hole. In this game, the players will develop concentration and accuracy.

The Catanduanes folk games were identified through interviews and actual observations. The interview revealed 24 games as identified by the 76 senior respondents.

The nature of these games was defined according to the title, materials needed, player composition, values, objectives, and mechanics of the games. The materials of the games depend on the location from where the player can gather. Games can be classified as individual or dual. Furthermore, cultural



Figure 4: The “it” is preparing the can for the game tumbalata (knock down the can)



Figure 5: The player is trying to flick the tagisik (Anahaw Tree Fruit) into a hole

values were distinctly seen in these games such as cooperation, commitment, resourcefulness, determination, honesty, social responsibility, and respect. Finally, objectives in the games were also drawn such as to develop accuracy, speed, agility, balance, strength, alertness, concentration, coordination, endurance, focus, flexibility, and speed.

At an early stage, young generations should be involved in participating to the different folk games by integrating the games into school curriculum implemented by the teachers and committee to build up the skill for social interaction, memory, emotional awareness, creative approach, adaptability, and impulse control.

Local academe should look at our local games as an avenue for character formation and nation building.

Playing the traditional games made by the researcher be adopted in schools for instruction purposes and in community organizing sociocultural activities for it holistically develops a child participating in the games.

The provincial government should have the support in giving fund to the provincial tourism and other municipalities in conducting and integrating folk games to the different special occasions to preserve and promote the local heritage in the realization of the salient features and objectives.

The local leaders of the community must promote and encourage the young generation, out-of-school youth, and adult to play the games inherent in their locality.

REFERENCES

1. Philippine Constitution; 1987.
2. Academic American Encyclopedia; 2006.
3. Aguado D. The Traditional Filipino Street Games Are Alive in the Philippines. Philippines: Magna Kultura Foundation: A Philippines Arts and Culture Organization; 2013.
4. Alfafero JA, Mejarito CL. Traditional games in leyte and the values learned by the players. Univ Visayas J Res 2014;8:269-80.
5. Almon J. The Value of Risk in Children's Play. Vol. 19. United States: CreateSpace Independent Publishing Platform; 2014.
6. Aypay A. Investigating the role of traditional children's games in teaching ten universal values in Turkey. Eur J Educ Res 2016;62:283-300.
7. Barboza AC. In Focus: Traditional Games in the Philippines. Philippines: National Commission for Culture and the Arts; 2003.
8. Bejerano PY, Buot MM. Local games in Maonon, Ligao city, bicolor peninsula: Symbolism of community identity. J Nat Stud 2018;17:41-55.
9. Bernaldez HR. Research Methods in Anthropology: Qualitative and Quantitative approaches. 3rd ed. Walnut Creek, CA: Alta Mira Press; 2002.
10. Brockman E. The Positive Power of Play. Children's Creative

- Museum. Available form: <https://www.childrenscreativity.wordpress.com/2012/12/05/the-positive-powerof-play>
11. Buan AR, Monte RN, Dela Cruz JS, Salangsang TA. Preservation of Culture through Philippines Games. Department of Human Kinetics, College of Arts and Science: University of the Philippines. Philippines: Rushing Water Publishers Ltd.; 2010.
 12. Buot MM. Los Baños Folk Festival: Its role in sustaining health of the socio-cultural environment. *Asia Life Sci* 2008;2:53-65.
 13. Donaldson F. International foundation for original play. *Croatian J Educ* 2018;16:95-112.
 14. Entertainment Computing and Serious Games: International GI-Dagstuhl Seminar (5283). Dagstuhl Castle Germany: Revived Selected Papers; 2015. p. 17-41.
 15. Febrian DW, Wardono, Supriyono. Pembelajaran TGT melalui pendekatan PMRI berbantuan permainan tradisional terhadap kemampuan berpikir kreatif. *UNNES J Mathemat Educ* 2013;2:16-24.
 16. Huizinga J, Hartzog M. Handbook of Texas Online, Homo Ludens-a study of the Play-Element in Culture. Tamil Nadu: Folk Games; 1955.
 17. International Council of Sport Science and Physical Education.
 18. Khalid S. Value of traditional games. *Nurture* 2008;5:19-21.
 19. Kovačević T, Opić S. Contribution of traditional games to the quality of students relations and frequency of students' socialization in primary education. *Croatian J Educ* 2013;16:95-112.
 20. Kožić M. Dječjeigre u okoliciZagreba. In: Benc-Bošković K, editor. *Etnografskabaštinaokolice Zagreba*. Zagreb: Hrvatskoetnološkodruštvo; 1988. p. 51-62.
 21. Lestari PI, Prima E. The implementation of traditional games to improve the social emotional early childhood. *J Educ Sci Technol* 2017;3:178-84.
 22. Linaza MT, Gutierrez A, García A. Pervasive augmented reality games to experience tourism destinations. *Information and Communication Technologies in Tourism*. Berlin, Germany: Springer; 2014. p. 497-509.
 23. Lopez ML. A Study of Philippine Games. Quezon, Philippines: U.P Press; 2001.
 24. Lusiana E. Membangun Pemahaman Karakter Kejujuranmelalui Permainan Tradisionalpada Anak Usia Dini di Kota Pati. *J Early Childhood Educ Papers UNNES* 2012;1:1-6.
 25. Matoković D. Dječjivijet. *Etnološkaistraživanja* 2003;9:53-76.
 26. Nugraha YA, Handoyo E, Sulistyorini S. Tradional game on the social skill of students in the social science learning of elementary school. *J Prim Educ* 2018;7:220-7.
 27. Perdani P. Peningkatan Keterampilan Sosial Anakmelalui Permainan Tradisional. *J Pendid Usia Dini* 2014;8:129-36.
 28. Pacific Rim International Journal of Nursing Research.
 29. Philippine Preservation Act of 2017.
 30. Salen K, Zimmerman E. *Rules of Play-game Design Fundamentals*. Cambridge, Massachusetts, London, England: MIT Press; 2004.
 31. Shea MB, Deaner RO. Sex differences in sports interests and motivations: An evolutionary perspective. *Evol Behav Sci* 2015;10:73-97.
 32. Snel C. The Role of Traditional Children Games within the Context of Intangible Heritage. South Africa: Chief Albert Luthuli Museum Stanger; 2009.
 33. Swapnil V. *Int J Res Soc Sci* 2016;6:2249-496.
 34. Shumaker H. Why We Say "NO" to Homework? Available from: <https://www.heathershumaker.com/2012/09/12/why-we-say-no-to-homework/12> [Last accessed on 2019 Aug].
 35. Wilhelmsen T. *Physical Activity in the Everyday Life of Children*. Norway: Norwegian University of Science and Technology; 2012.
 36. Tubera JG. Street games of the Kapampangan children. *Int J Eastern Sports Phys Educ* 2008;6:41-55.
 37. UNESCO'S Universal Declaration on Cultural Diversity. Adopted by the 31st Session of the General Conference of UNESO. Paris: UNESCO; 2010.
 38. Stojanovska TV. *The Educational Prospects of Traditional Games as Learning Activities of Modern Students*. 2014
 39. Vujanović M. *Pagarešto: Igreizmladosti*. Split: Etnografskimuzej Split. Yoga Awalludin Nugraha, Eko Handoyo Sri Sulistyorini *JPE* 2009;7:220-7.



Research Article

Impact on speed and agility due to specific Kho-Kho training on different preparatory phase

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ABSTRACT

The purpose of the study is to find out impact on speed and agility due to specific Kho-Kho training on different preparatory phase. To achieve the purpose of the study, 30 university Kho-Kho players were selected from Osmania University. The age of the subjects was ranged from 17 to 23 years. The selected subjects were divided into two equal groups; each group consists of 15 subjects. Group – I underwent specific Kho-Kho training for 3 alternate days in a week for 12 weeks, the Group – II (control group) does not undergone any specific training other than the regular routine activities. The variables selected in the study were speed and agility and they were measured by standard test such as 50 mts run and shuttle run, respectively, before and after 12 weeks of training. The data were analyzed using analysis of covariance. The level of significance was fixed at 0.05. The findings of the present study have strongly indicated that there were significant changes on speed and agility due to Kho-Kho specific training at different preparatory phase.

Keywords: Agility, Preparatory phase, Specific training, Speed

INTRODUCTION

Scientific tools and techniques have replaced the traditional mode of selection and training. Involvement in systematic program of training brings about desirable changes in the physical and physiological factors contributing to the development of functional ability that enhances the player's performances in the sport. For the physiological system of the body to be fit, it must function well enough to support the specific activity that the individual is performing. The structure of the training process in team sports during the annual macro cycle in the periodization of athletic training has received the most practical justification Bondarchuk (2002). The planning of the training process is based on the one-cycle system consisting of three periods such as preparatory, competitive, and transition Kanurov (2002) and the preparatory period plays the key roles as it shapes performance stability Stasiuk (2014). The construction of the training process in the preparatory period

depends on calendar events, as well as on the main tasks to be solved in the preparatory period according to the conceptual foundations of the theory of periodization of sport training Aytkulov (2005). Based on the objectives of the preparatory period, training should be concentrated on facilitating fitness shaping, creating a basic foundation of preparedness of the players, a gradual adaptation to competitive activities Andreyev (2004). The pre-season training is the base creation for better performance in the competition Hardayal (1984). The preparatory period is characterized by increase of volume of load as compared to the intensity of the load.

Specific training package means a systematically and scientifically prepared program which consists of conditioning exercises, physical activities, drills and tactical maneuvers designed to improve the physical fitness, techniques, and playing ability of the players. At the present time, the idea of sport-specific training is touted as being able to duplicate or imitate a specific skill or aspect of one's sport or activity (Cittibabu, 2013). Specific training in its current concept is a means of simulating a movement or exercise with the intention of it transferring to the playing field, regardless of what that

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field is. Specificity training is closely examining the unique and specific biomechanical movements of the body while performing a given activity. In physical preparation, the quality of training can be improved by developing highly specific means of training (Muller *et al.*, 2000). Speed is the capacity to travel or move very quickly. Like all bio-motor abilities speed can be broken down into different types. It may mean the whole body moving at maximal running speed, as in the sprinter. It may involve optimal speed, such as the controlled speed in the approach run of the jumping events. Or, it may include the speed of a limb, such as the throwing arm in the shot or discus, or the take-off leg in the jumps. Speed training involves development of a skill so that the technique is performed at a faster rate. To develop speed, the skill must be practiced on a regular basis at a maximum or close to maximum rate of movement. Agility is the ability to change the body's position efficiently and requires the integration of isolated movement skills using a combination of balance, coordination, speed, reflexes, strength, endurance, and stamina. Sheppard and Young (2006) defined agility as "a rapid whole body movement with change of velocity or direction in response to a stimulus." In sports, agility is often defined in terms of an individual sport, due to it being an integration of many components each used differently specific to all of sorts of different sports.

METHODOLOGY

The purpose of the study is to find out impact on speed and agility due to specific Kho-Kho training on different preparatory phase. To achieve the purpose of the study, 30 university Kho-Kho players were selected from Osmania University. The age of the subjects were ranged from 17 to 23 years.

Training Procedure

The selected subjects were divided into two equal groups; each group consists of 15 subjects. Group – I underwent specific Kho-Kho training for 3 alternate days in a week for 12 weeks and the Group – II (control group) does not undergone any specific training other than the regular routine activities. The specific speed and agility training drills were selected from the book "Training for speed, agility, and quickness" (Brown, *et al.*, 2000). The below training schedule was followed for each week. The description of the exercise is presented in Table 1.

Statistical Technique

All the subjects were tested before and immediately after the experimental periods on the selected dependent variables such as speed and agility was measured by 50 mts run and shuttle run, respectively. The data obtained from the experimental groups before and after the experimental period were statistically analyzed with Analysis of covariance (ANCOVA). The level of confidence was fixed at 0.05 levels for all the cases.

Table 1: Training Schedule

DAY	TRAINING EXERCISE	PHASE I	PHASE II	PHASE III
MONDAY	Post to post sprint	Vol: 3 set 6 Rep Rest 1:3 1 to 4 weeks	Vol: 3 set 8 Rep Rest 1:3 (5 to 8 weeks)	Vol: 3 set --- 4/8
	Box Sit and run			
	Zig -Zag run			
	Chasing the partner			
WEDNESDAY	10 pushups and 15mts run			
	Directional Foot Movement			
	Directional Hand Movement			
	Star Drill			
	Side Shuffle			
FRIDAY	Card-Snatching			
	Cart Wheel			
	Five-Cone Drill			
	V - Drill			
	Backward Roll over			
	Shoulder in out shuffle			

ANALYSIS OF THE DATA AND RESULTS

The results of ANCOVA on data collected before and after the experimental period on the selected variables among the control group and specific Kho-Kho training group are presented in tables.

Speed

The table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20. Table 2 shows that the pre-test means of speed of control group and specific Kho-Kho training group are 7.32 and 7.40, respectively. The obtained "F" ratio value of 0.67 for pre-test means on speed is lesser than the required table value of 4.20 which shows that there was no significant between the groups at pre-test period. The post-test means on speed of control group and specific Kho-Kho training group are 7.26 and 7.03, respectively. The obtained "F" ratio value of 13.66 for post-test data on speed is greater than the required table value of 4.20. The adjusted post-test means on speed of control group and specific Kho-Kho training group are 7.27 and 7.01, respectively. The obtained "F" ratio value of 40.73 of adjusted post-test data on speed is greater than the table value of 4.21. The results of the study showed that there was significant difference among the adjusted post-test means of control group and specific Kho-Kho training group. Since only two groups are involved, *post hoc* test is not required.

Agility

The table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.

Table 3 shows that the pre-test means of agility of control group and specific Kho-Kho training group are 10.14 and 10.04, respectively. The obtained "F" ratio value of 0.55 for pre-test means on agility is lesser than the required table value of 4.20 which shows that there was no significant between the groups at pre-test period. The post-test means on agility of control group and specific Kho-Kho training group are 9.87 and 9.46, respectively. The obtained "F" ratio value of 7.05 for post-test data on agility is greater than the required table

Table 2: Analysis of covariance on speed of control group and training group

	Control Group	Training Group	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	'F' ratio
Pre-test mean	7.32	7.40	Between	.048	1	.04	.67
Standard Deviation	.24	.28	Within	1.979	28	.07	
Post-test mean	7.26	7.03	Between	.385	1	.385	13.66
Standard Deviation	.17	.15	Within	.789	28	.028	
Adjusted post-test mean	7.27	7.01	Between	.513	1	.51	40.73
			Within	.340	27	.013	

Table 3: Analysis of covariance of agility of control group and training group

	Control Group	Training Group	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	'F' ratio
Pre-test mean	10.14	10.04	Between	.07	1	.07	0.55
Standard Deviation	.33	.40	Within	3.81	28	.13	
Post-test mean	9.87	9.46	Between	1.26	1	1.26	7.05
Standard Deviation	.38	.46	Within	5.03	28	.18	
Adjusted post-test mean	9.82	9.51	Between	.69	1	.69	18.87
			Within	.99	27	.03	

value of 4.20. The adjusted post-test means on agility of control group and specific Kho-Kho training group are 9.82 and 9.51, respectively. The obtained "F" ratio value of 18.87 of adjusted post-test data on agility is greater than the table value of 4.21 required for significance at 0.05 level of confidence with degree of freedom 1 and 27. The results of the study showed that there was significant difference among the adjusted post-test means of control group and specific Kho-Kho training group. Since only two groups are involved, *post hoc* test is not required.

DISCUSSION

Periodization is a way of alternating or cycling training leading up to peaking for a competition. Training programs in this period are to be designed to increase maximum capacities of the energy systems that are predominant when preparing for an event Bompa (2009). The different phases or stages that an athlete cycles through as part of the training process to

achieve the consistent performance levels necessary to win competitions Singh (1991). The construction of the training process in the preparatory period depends on calendar events, as well as on the main tasks to be solved in the preparatory period according to the conceptual foundations of the theory of periodization of sport training Babkin (2004). The specific preparation phase of the preparatory period included adaptation of players to competitive pressures, improving playing techniques under conditions close to competitive, perfecting technical, and tactical interactions of players increasing physical fitness that would make them effectively participating in competitive activities Stasiuk (2017). Patsy Neal (1989) stated that the pre-season training is the time to perfect skills, work on fundamentals, and ponder strategy and to strive for high level of conditioning for a specific sport. Thomas Reilly (1990) have considered the pre-season training as highly important as it includes programs of fitness training. Specific volleyball conditioning is necessary in pre-season for the development of the lower-body strength, agility, and speed performance in volleyball players Patrick (2008). The results of the present study were justified by the above supporting studies that specific Kho-Kho training with different phases of training shows significant improvement on speed and agility.

CONCLUSIONS

Based on the results of the study, it was concluded speed and agility showed significant improvement due to that of different preparatory phase specific Kho-Kho training.

REFERENCES

1. Andreyev SN, Levin VS. Mini-football (in Ukrainian). Lipetsk: The Lipetsk Newspaper; 2004. p. 496.
2. Aytkulov SA. Formation of Technical and Tactical Actions of Skilled Athletes in Mini-football (in Ukrainian). Ph.D. Thesis, Chelyabinsk; 2005. p. 25.
3. Babkin AE. Technology of Planning Physical and Technical and Tactical Training of Minifootball Team during Organization of Tours of Competitions (in Ukrainian). Ph.D. Thesis, Moscow; 2004. p. 24.
4. Bompa T, Haf G. Periodization, Theory and Methodology of Training. 5th ed. Campaign, Ill: Human Kinetics; 2009.



Research Article

Effects of roasted garlic with and without Moringa on mean atrial pressure, TSH hormone, and testosterone among men

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ABSTRACT

The purpose of the study was to investigate “Effects of Roasted Garlic with and without Moringa on Mean Atrial Pressure, Thyroid Stimulating Hormone, and Testosterone among Sedentary Men.” Selection of Variables: The following variables were selected for this study. I. Dependent variables: Mean atrial pressure, thyroid stimulating hormone, and testosterone. II. Independent variables: (1). Roasted Garlic with *Moringa oleifera*, (2). Roasted Garlic, and (3). control Group. Experimental Design: Forty-five subjects were selected for this study through the random group design consisting of pre- and post-test, 45 men randomly divided into three groups, the group was assigned as an Experimental Group I, Experimental Group II, and control group. The groups are (1). Roasted Garlic with *Moringa oleifera*, (2). Roasted Garlic, and (3). control group. Training schedules: During the training period, the experimental group underwent their training program period of 8 weeks for all days. The experimental groups underwent training for 45 min of duration in evening hours between 4:30 and 5:30 pm for 7 days/week. Statistical technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. If the adjusted post-test results were significant, the Scheffe’s *post hoc* test was used to determine the paired mean significant difference. thirumalaisamy R. (2004). After incorporate statistical technique, it was found a significant decrease mean atrial pressure, thyroid stimulating hormone, and testosterone in Experimental Group I (Roasted Garlic With *Moringa oleifera*), when compared with Experimental Group II and this change due to 8 weeks of training among sedentary men.

HEALTH BENEFITS OF GARLIC

(1) Roasting Garlic concentrates the sugars, transforming it into a caramelized, spreadable, buttery texture, with sweet, deep complex flavors, removing all the sharpness, pungency, and bite. (2) It is easier to digest for many people. (3) It gives sweetness and depth to the dishes; you are already making – soups stews, mashes, dressings, marinades, and sauces. (4) It is a great way to preserve garlic. (5) Because it smells amazing and will make you and your family feel cozy and happy. I am not kidding.

HEALTH BENEFITS OF MORINGA

Moringa has many important vitamins and minerals. The leaves have 7 times more Vitamin C than oranges and 15 times more

potassium than bananas. It also has calcium, protein, iron, and amino acids, which help your body heal and build muscle. It is also packed with antioxidants, substances that can protect cells from damage and may boost your immune system. There is some evidence that some of these antioxidants can also lower blood pressure and reduce fat in the blood and body.

It is traditionally been used as a remedy for such conditions as: (1). Diabetes, (2). long-lasting inflammation, (3). bacterial, (4). viral, (5). fungal infections, (6). joint pain, and (7). heart health.

EXPERIMENTAL DESINGN

Forty-five men were selected as subject for this study and the subject was selected for this study through the random group design consisting of pre- and post-test, 45 men randomly divided into three groups, the group was assigned as an Experimental Group I, Experimental Group II, and control

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group. The groups are (1). Roasted Garlic, (2). Roasted Garlic with Anuloma Viloma practice, and (3).control group.

TRAINING SCHEDULES AND SUPPLEMENTATION

During the training period, the experimental group underwent their training program period of 8 weeks for all days with Roasted Garlic with Moringa., Statistical technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. thirumalaisamy R. (2004). Computation of Analysis of Covariance: The following tables illustrate the statistical results of effects of Roasted Garlic with Anuloma Viloma practice on mean atrial pressure among men and ordered adjusted means and the difference between the means of the groups under study [Table 1 and Figure 1].

DISCUSSION ON FINDINGS OF MEAN ATRIAL PRESSURE

From these analyzes, it is found that the results obtained from the experimental groups had significant reduction in the mean atrial pressure level when compared with the one from the control group. This is due to the inclusion of Roasted Garlic with Moringa and Roasted Garlic in the analyzes on experimental groups.

It is interesting to note that the results obtained from Experimental Group I had more effect than Experimental Group II on the reduction of mean atrial pressure level. This is due to the implementation of Roasted Garlic with Moringa in Experimental Group II. It is concluded that the mean atrial pressure was reduced after the implementation of Roasted Garlic with Moringa supplementation and the blood capillaries were more positively relaxed and the pressure was greater reduction. So that the pressure level was reduced from its high level to moderate level when compared to the pre-test [Table 2 and Figure 2].

DISCUSSION ON FINDINGS OF TSH

From these analyzes, it is found that the results obtained from the experimental groups had significant reduction in the TSH and greater increase moderately when compared with the one from the control group. This is due to the inclusion of Roasted Garlic with Moringa in the analyzes on experimental groups.

It is interesting to note that the results obtained from Experimental Group I had more effect than Experimental Group II on the greater maintenance of TSH level. This is due to the implementation of Roasted Garlic with Moringa

in Experimental Group I. It also plays an important role in regulating your weight, body temperature, muscle strength, and even your mood. TSH is made in an all the gland in the brain. When thyroid levels in your body are low, the pituitary gland makes more TSH. When thyroid levels are high, the pituitary gland makes less TSH. Hence, its concluded that when the Roasted Garlic With Moringa is having the potential effect to produce right level of pituitary gland secretion so it will be full control on TSH [Table 3 and Figure 3].

DISCUSSION ON FINDINGS OF TESTOSTERONE

From these analyzes, it is found that the results obtained from the experimental groups had significantly in testosterone level when compared with the one from the control group. This is due to the inclusion of Roasted Garlic with Moringa in the analyzes on experimental groups. It is interesting to note that the results obtained the value of testosterone from Experimental Group I had greater increase from its lower level to maximal level than the Experimental Group II on the improvement of testosterone.

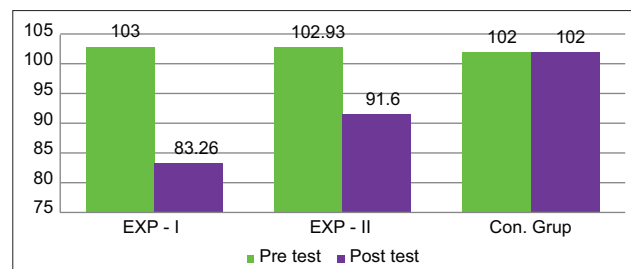


Figure 1: Final mean difference of mean atrial pressure

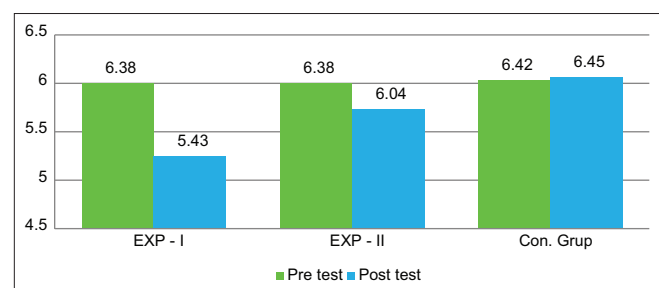


Figure 2: Final mean difference of TSH

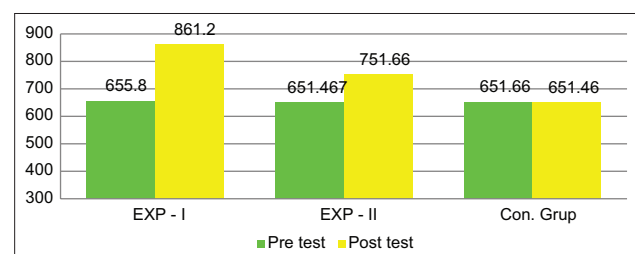


Figure 3: Final mean difference of testosterone

Table 1: Analysis of covariance of mean atrial pressure

Means	EXP-I	EXP-II	Con. Grup	S.V	S.S	D.F	M.S	O.F
Pre test Mean	103	102.93	102	B	9.37	2	4.68	0.40
				W	492.93	42	11.736	
Post test	83.26	91.6	102	B	2642.71	2	1321.35	77.02
				W	720.53	42	17.15	
Adj.Post test	83.18	91.53	102.14	B	2666.93	2	1333.46	78.74
				W	694.35	41	16.93	

Table 2: Computation of analysis of covariance of TSH

Means	EXP-I	EXP-II	Con. Grup	S.V	S.S	D.F	M.S	O.F
Pre-test Mean	6.38	6.38	6.42	B	460.18	2	230.09	0.34
				W	10.89	57	0.19	
Post-test	5.43	6.04	6.45	B	409.91	2	204.95	71.94
				W	6.58	57	0.11	
Adj. Posttest Mean	5.43	6.04	6.44	B	13.01	2	6.50	71.13
				W	6.13	56	0.10	

Table 3: Computation of analysis of covariance of testosterone

Means	EXP-I	EXP-II	Con. Grup	S.V	S.S	D.F	M.S	O.F
Pre-test	655.8	651.467	651.66	B	179.51	2	89.75	0.21
				W	18175.46	42	432.74	
Post-test	861.2	751.667	651.46	B	330128.31	2	165064.15	154.85
				W	44771.46	42	1065.98	
Adj. Post test	860.9416	751.805	651.58	B	326552.97	2	163276.48	150.03
				W	44619.07	41	1088.27	

This is due to prescription of the natural supplemented to boost the volume of testosterone in the Experimental Groups I. It is concluded that the experimental groups had greater improvement in volume of testosterone in men, due to influence of Roasted Garlic with Anulom Viloma practice.

RESULTS

Within the limitations of the study, the following conclusions were drawn: After incorporate statistical technique, it was found that a significant decrease mean atrial pressure and increase iron TSH and testosterone in Experimental Group I (Roasted Garlic with Moringa), this change due to 8 weeks of Roasted Garlic with Moringa among sedentary men.

REFERENCES

1. Domenico M, Lina C, Francesca B. Sustainable crops for food security: Moringa (Roasted Garlic Lam.). In: Encyclopedia of Food Security and Sustainability. Netherlands: Elsevier; 2019. p. 409-15.
2. Abdel-Rahman Mohamed A, Metwally MM, Khalil SR, Salem GA, Ali HA. Roasted garlic extract attenuates the CoCl₂ induced hypoxia of rat's brain: Expression pattern of HIF-1 α , NF-kB, MAO and EPO. Biomed Pharmacother 2019;109:1688-97.
3. Valdés-Rodríguez OA, Giadrossich F, Pérez-Vázquez A, Moreno-Secena JC, Above-and Below-ground Biomass and Allometry of Roasted Garlic and *Ricinus communis* Grown in Compacted Clayey Soils, Flora. Netherlands: Elsevier; 2018.

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