Original Article

THE EFFECT OF ERGONOMIC AND RESILIENCE ELEMENT ON PETANQUE THROW SKILLS AMONG SLOW LEARNER STUDENTS

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Abstract

Ergonomics is the science that helps humans build machines or equipment. The application of ergonomics will give the individual satisfaction and comfort of living the community. Resilience is a person's ability to react in a healthy and productive manner on petanque throw skills among slow learner students. The ergonomic is a branch of biomechanics practiced in sport as an external feature that involves the comfort of athletes. The comfortable training environment has impact on the performance of athletes. The purpose of this paper was to analyze the effect of ergonomic on petanque throw skill among slow learner students through an experimental approach. This type of study was a quasi-experiment utilizing descriptive quantitative methods. Data were collected from 16 slow learner students by using pre-test and post-test. The test score form was used as an instrument in this study. Data obtained were analyzed through the Statistical Package for Social Science (SPSS) version 22.0. The findings showed that there were no significant differences between pre-test and post-test on weight of ball ($t = -1.414$, $p > 0.05$) and on colour of ball ($t = 1.000$, $p > 0.05$). The findings showed that there were significant differences between pre-test and post-test by distance of game area ($t = 2.530$, $p < 0.05$). This study will provide guidance to teachers in improving petanque throw skill among slow learner students.

Keywords: Ergonomic, Resilience Element, Petanque Throw Skill, Slow Learner Students.

1. Introduction

The International Ergonomics Association (IEA) defines ergonomics as a scientific discipline related to the understanding of interactions between humans and other elements of a system toward human well-being. Mazlina (2017) asserted that, ergonomics is a relationship between humans and work environment. Rosley (2018) stated that, ergonomics is a term associated with the world of manufacturing, construction, and engineering technology by involving humans as workers. National Sports Institute Chief Executive Officer, Khairi Zawi (2016) stated that, ergonomics in sports are biomechanical branches involving movements, types of clothing and sports equipment used.

Ergonomics in sports has been widely practised to improve athlete performance to achieve maximum success. Therefore, the application of ergonomics in sports will allow athletes to train in comfortable atmosphere and achieve maximum satisfaction. Sports refers to all activities that require dexterity, skills and energy that can be done in the field for entertainment or competition purpose. Nur Dalilah (2017) asserted that, sports will have a positive impact on optimizing the physical, spiritual, emotional and physical well-being of students. Syed Lamsah (2018) agreed that, physical activities influence personality formation and cognitive learning processes. Zainal Abu Zarin (2010) stated that, the wide-ranging sports field will be the therapy, recovery, development, and widening of the minds of the People With Disability (PWD). Therefore, sports need to be exposed to the PWD to increase self-confidence and highlight their hidden talent in competing with normal athletes. Slow learner students are deemed to have physical age beyond mental age and this puts them under disabled category (Puteri Roslina, 2016) and have different problems (Chiang, 2018). This current study is essential in providing practical aspects for teachers as to guide slow learner students in petanque sports. Comfortable ergonomic application will help them to focus on throwing the ball. Therefore, the effect of ergonomic on petanque throw skill performance among slow learner students are important for teachers' practical references.

This study will help slow learner students to understand the concept of real petanque games. The weight of ball measured in pre and post tests is to examine the ability of slow learner students to throw at the distance determined in the study. In addition, the colour of different balls is to see the tendency of the respondents to choose a comfortable colour for them to throw a petanque ball. The modified distance of game area measured in pre-test and post-test is to examine the consistent level among

slow learner students. Vaughn (2012) asserted that, slow learner students need to be addressed in ways and communication options should be adapted to their abilities. Hence, to help slow learner students, all parties should invite them to try new knowledge or activities to highlight their hidden talents.

The word 'resilience' originates from the Latin verb 'resilire', which means 'to recoil or rebound'. During the early stages this term was used in the physics context or the scientific field of physics. According to Vesdiawati (2008), the term 'resilience' was used by Block when referring to the 'resilience of the ego', which refers to a high degree of self-adaptability and flexibility when facing pressure. Resilience also means the ability to survive by recovering from a situation or returning to its original shape after been compressed, stretched or bent. When the term resilience is used in psychology it means a person's ability to quickly recover from changes, sickness, accidents, or adversities (Wijayani, & Budi A, 2011). Reivich & Shatte in Mulyani (2011) had defined 'resilience' as:

"…… the capacity to respond in a healthy and productive way and when faced with adversity or trauma, that it is essential for managing the daily stress of life."

Resilience is a person's ability to react in a healthy and productive manner when faced with a traumatic situation whereby the situation is important for overcoming the daily stress in life (Henderson & Thompson, 2010; Shulman, 2009; Tefera, 2005; Mulyani Nasution, 2011). According to Grotberg (2003), resilience is the ability to evaluate, overcome and enhance oneself from what one is experiencing, such as the adversities in life (Sekar Wijayani, & Budi A, 2011). According to Zolkoski & Bullock, 2012, in Martin Hebert, resilience is:

"…….. defined in multiple ways, but two elements appear essential in all definitions: the presence of a threat to a healthy development and of a subsequent positive adaption" (Martin Hebert, dkk, 2014).

2. Hypothesis

The aims of the work are:

1. There is no significant difference between pre-test and post-test of ball weight on petanque throw skills among slow learner students

2. There is no significant difference between pre-test and post-test of ball colour on petanque throw skills among slow learner students

3. There is no significant difference between pre-test and post-test of game area distance on petanque throw skills among slow learner students

3. Methodology

Samples consisted of thirteen to sixteen years old slow learner students at Sekolah Menengah Kebangsaan Dato' Haji Talib Karim, Alor Gajah, Melaka. The school administrator had given permission to involve teachers. The information for guardians was circulated a week before the study was conducted. This study used quantitative methods. Three aspects of ergonomics namely weight of ball, colour of ball and distance of game area were analyzed to find the validity and reliability of petanque throw skill performance. The design of this study was a quasi-experiment and used for data collection process.

This study was conducted at the petanque court at Sekolah Menengah Kebangsaan Dato 'Haji Talib Karim, Alor Gajah, Melaka. Petanque balls, loops and score forms were used. The purpose of this study was to determine the effect of ergonomic on petanque performance skills among slow learner students. The subjects were 16 slow learner students who were briefed on the procedures to be carried out. The test was conducted here by with slow learner students were required to throw petanque balls according to the procedures set by the researchers. The aspects tested in this study were the weight of ball, colour of ball and distance of game area. The scores obtained were recorded in the score form during the data collection process. Figure 1 shows framework the effect of ergonomic on petanque throw skills among slow learner students

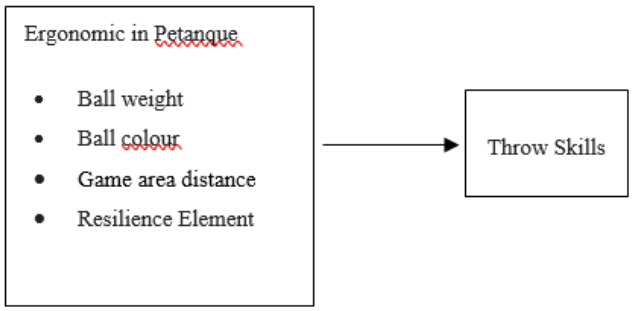

Figure 1. Framework of Study

4. Results and Discussions

The results are based on the hypotheses of the study.

4.1 Hypothesis 1: There is no significant difference between pre-test and post-test of ball weight on petanque throw skills among slow learner students

Table 1. Weight of Ball (One Sample Test)

Weight of Ball						
Test	Mean	Std. Devian	Std. Error Mean	t	df	Sig (2-tailed)
Pre - Test	1.33	.500	.167	8.000	8	.000
Post - Test	1.67	.500	.167	10.000	8	.000

Table 2. Weight of Ball (Paired Samples Statistics)

Weight of Ball	
Mean	-.333
Std. Devian	.707
Std. Error Mean	.236
T	-1.414
Df	8
sig (2 - tailed)	.195

Tables 1 and 2 show the t-values for the difference between pre-test and post-test of ball weight on petanque throw skills among slow learner students; t = -1.414 and the significant level p = .195. This significant level was greater than 0.05 (p> 0.05).

This hypothesis was accepted as there was no difference between pre-test and post-test of ball weight on petanque skills among slow learner students. Therefore, the different ball weight in petanque does not affect petanque throw skills among slow learner students.

4.2 Hypothesis 2: There is no significant difference between pre-test and post-test of ball colour on petanque throw skills among slow learner students.

Table 3. Colour of Ball (One Sample Test)

Colour of Ball						
Test	Mean	Std. Devian	Std. Error Mean	t	Df	Sig (2-tailed)
Pre - Test	1.67	.500	.167	10.000	8	.000
Post - Test	1.44	.527	.176	8.222	8	.000

Table 4. Colour of Ball (Paired Samples Statistics)

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Mean	.222
Std. Devian	.667
Std. Error Mean	.222
T	1.000
Df	8
sig (2 - tailed)	.347

Tables 3 and 4 show the t-values for difference between pre-test and post-test of ball colour on petanque throw skills among slow learner students; t = 1.000 and significant levels p = .347. This significant level was greater than 0.05 (p> 0.05).

This hypothesis was accepted as there was no difference between pre-test and post-test of ball colour on petanque throw skills among slow learner students. Therefore, the different ball colour in petanque does not affect petanque throw skills among slow learner students.

4.3 Hypothesis 3: There is no significant difference between pre-test and post-test of game area distance on petanque throw skills among slow learner students.

Table 5. Distance of Game Area (One Sample Test)

Distance of Game Area						
Test	Mean	Std. Devian	Std. Error Mean	t	Df	Sig (2-tailed)
Pre - Test	1.78	.441	.147	12.095	8	.000
Post - Test	1.33	.500	.167	8.000	8	.000

Table 6. Distance of Game Area (Paired Samples Statistics)

Distance of Game Area	
Mean	.444
Std. Devian	.527
Std. Error Mean	.176
T	2.530
Df	8
sig (2 - tailed)	.035

Tables 5 and 6 show the t-value of the difference between pre-test and post-test of game area distance on petanque throw skills among slow learner students; t = 2.530 and significant level p = .035. This significant level was lower than 0.05 (p <0.05).

This hypothesis was rejected because there was a difference between pre-test and post-test of game area distance on petanque throw skills among slow learner students. Therefore, the different distance of game area affects petanque throw skills among slow learner students.

5. Discussion

To study pre-test and post-test of ball weight, ball colour and game area distance on petanque throw skill among slow learner students

The findings show that there is no difference between pre-test and post-test of ball weight on petanque throw skills among slow learner students. Based on the pre-test and post-test, the t-value for the difference between pre-test and post-test ball weight on petanque throw skills among slow learner students was t = -1.414 and significant level p = .195. This significant level is greater than 0.05 (p> 0.05). Thus, it is clear that the weight of the ball used in this study either 690 gram or 670 gram does not affect the petanque throw skills among slow learner students.

The findings show that there is no difference pre-test and post-test of ball colour on petanque throw skills among slow learner students. Based on the pre-test and post-test, the t-value for the difference between pre-test and post-test ball colour on petanque throw skills among slow learner students was t = 1.000 and the significant level was p = .347. This significant level is greater than 0.05 (p> 0.05). Therefore, the colour of ball does not affect the petanque throw skills among slow learner students.

The findings show that there is no difference between pre-test and post-test of game area distance on petanque throw skills among slow learner students. Based on the pre-test and post-test, the t-value for the difference between pre-test and post-test game area distance on petanque throw skills among slow learner students was t = 2.530 and significant level p = .035. This significant level is lower than 0.05 (p <0.05). Therefore, distance of game area are affects petanque throw skill among slow learner students. Therefore, the distance of game area does affect the petanque throw skills among slow learner students.

6. Conclusion

In conclusion, the ergonomic effect is appropriate to be applied in petanque sports throwing skills. The Federation of Petanque Malaysia (PPM) should create more petanque category championships to give participants with disability the opportunity to reveal their talents. In addition, the results of the study show that the use of modified short distance affects the petanque throw skill among slow learner students. The short distance range is seen as a comfortortable means for slow learner students to perform their petanque throw skills. Therefore, this study will be the reference of practitioners or coaches to improve the petanque throw skills among slow learner students.

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REFERENCES

1. Abdullah, S., Shah Tengku, T.K., Mahamood, A.F., ...Ramli, A.J., Ab Rahman, Z. (2022). Function Of The Neuroscience Aspect In Surah Al-Insyirah And Al-Ankabut In Increasing Happiness And Alleviating Stress During The Post Covid-19 Pandemic Era. Journal of Pharmaceutical Negative Results, 13. pp. 2351–2357. DOI 10.47750/pnr.2022.13.S06.306
2. Alkaabi, M., Kudus, N., Ab Rahman, Z. A. (2022). Literature Review on the Impact of Work Environment, Leadership Styles and Resilience on Job Performance in UAE. Journal of Pharmaceutical Negative Results, 2022, 13, pp. 2332–2341. DOI 10.47750/pnr.2022.13.S06.304
3. Asiah Mohd Pilus, Mohd Norafif, Anuar Din & Nazmizan Muhammad., 2017. The Effect of Sport Technology on Student - Athletes' Petanque Skill Performance. International Journal of Applied Engineering Research, Volume, 12, Issue 17.
4. Bikar, S.S.; Rathakrishnan, B.; Kamaluddin, M.R.; Che Mohd Nasir, N.; Mohd Nasir, M.A. Social Sustainability of Post-Disaster: How Teachers Enable Primary School Students to Be Resilient in Times of Ranau Earthquake. Sustainability 2021, 13, 7308. https://doi.org/10.3390/su13137308
5. Chiang Ee Fong., 2018. From Special Education to Recovery Education: Two Learning Programs, Institut Pendidikan Guru Kampus Pulau Pinang. Analitika, Volume 10, Issue 1, pp. 46–53,
6. Kamaluddin M, Shariff NS, Nurfarliza S, Othman A, Ismail KH, Mat Saat GA. Psychological traits underlying different killing methods among Malaysian male murderers. Malays J Pathol. 2014 Apr;36(1):41-50.
7. Mazlina Che Malek, Amirul Firdaus, Nadwatul Husna & Azharuddin Hashim., 2017. Hubungan antara Faktor-Faktor Ergonomik Terhadap Prestasi Kerja dalam Kalangan Kakitangan Kilang Proton Shah Alam. 4th International Conference on Management and Muamalah (ICoMM), pp. 341-350.
8. Mohamad Khadafi Hj. Rofie, Muhamad Amar Mahmad, Nor Hanani Ismail et.al. 2021. Management of umrah package operations: An Analysis of umrah operating Companies Experience. Journal of Central Asia and The Caucasus. Volume 22 (5): 60-65.
9. Muhamad Amar Mahmad, Nor Hanani Ismail, Mohamad Khadafi Hj. Rofie et al. 2021. The impact of covid-19 pandemic on the management of umrah package operations in Malaysia. Journal of Central Asia and The Caucasus. Volume 22 (5): 43-50.
10. Muhamad Amar Mahmad, Nor Hanani Ismail, Mohamad Khadafi Hj. Rofie et al. 2021. Determinant factors of the operational management for Malaysia umrah package. Journal of Central Asia and The Caucasus. Volume 22 (5): 51-59.
11. Nur Dalilah Dahlan & Tajul Arifin Muhamad., 2017. Kekuatan Mental Dan Prestasi Akademik Atlet Bola Sepak Universiti Kebangsaan Malaysia. Journal of Sports Science and Physical Education, Volume 6, Issue 1, pp. 21-35.
12. Omar M.N., Long A.S., Mahmood A.R., Rahman Z.A.B. (2021). Islamic notion of happiness (Al-Sa'ada): An analysis of Miskawayh's thought. International Journal of Islamic Thought(IJIT), 19 (1), pp. 49-57. DOI: 10.24035/IJIT.19.2021.195.
13. Puteri Roslina & Azimah Bukhari., 2016. The Learning Styles of Slow Learners in Malay Language. Jurnal Bahasa, Volume 16, Issue 2, pp. 323-348.
14. Tharshini, N.K.; Ibrahim, F.; Kamaluddin, M.R.; Rathakrishnan, B.; Che Mohd Nasir, N. The Link between Individual Personality Traits and Criminality: A Systematic Review. Int. J. Environ. Res. Public Health 2021, 18, 8663.
15. Rathakrishnan, B.; Bikar Singh, S.S.; Kamaluddin, M.R.; Yahaya, A.; Mohd Nasir, M.A.; Ibrahim, F.; Ab Rahman, Z. Smartphone Addiction and Sleep Quality on Academic Performance of University Students: An Exploratory Research. Int. J. Environ. Res. Public Health 2021, 18, 8291. https://doi.org/10.3390/ijerph18168291
16. Rathakrishnan, B., Singh, S.S.B., Yahaya, A., ...Krishnan, A.R., Rahman, Z.A. The Influence of Social Media Use on Social Connectedness Among University Students Lecture Notes in Networks and Systems, 2023, 550 LNNS, pp. 465–476. DOI 10.1007/978-3-031-16865-9_37
17. Rosley Jaafar, Zuraira Libasin & Wan Noorli Razali., 2018. Aplikasi Ergonomik: Komitmen Majikan dan Pekerja. Journal of Advanced Research in Business and Management Studies, Volume 2, Issue 1, pp. 93-102.
18. Syed Lamsah, Mohd Imran & Sareena Hanim Hamzah., 2018. Kepentingan Aktiviti Fizikal Dalam Membina Personaliti Dan Meningkatkan Prestasi Akademik. Jurnal Sains Sukan dan Pendidikan Jasmani, Volume 7, Issue 1, pp. 21-33.
19. Vaughn Sharon & Fuchs Lynn., 2012. Responsiveness to Intervention: A Decade Later. Journal of Learning Disabilities, Volume 45, Issue 3, pp. 195–203.