Physical Education And Game-Based Approach: An Attempt To Improve Basic Move Skills

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Abstract: This study aimed to identify the improvement of basic skills through game-based approach in physical education. The method employed in this study was experiment featuring pretest and posttest control group design. There were 245 participants in this study with the age average of female students was ± 9.1 years old and that of male students was ± 9.2 years old who came from four different areas namely Bandung City, Bandung Regency, West Bandung Regency, and Cimahi City, Indonesia. Each experiment lasted for 90 minutes and had been carried out for 16 sessions. This study administered Motor Gross Test Development 2nd edition consisted of locomotor and object skills. The results showed that the group given game-based approach (experimental group) outperformed one without the approach in terms of one without the approach (control group) in terms of basic move skill improvement. Furthermore, it was also shown that game-based approach significantly improved basic move skills.

Keywords: game-based approach, basic move skills, physical education

1. Introduction

Physical education for children focused on teaching basic move skills to facilitate both physical and functional development. Such skills are crucial in daily life and further in complex real life. It is also expected that the skills are for sustainable long life (Evridiki, Liukkonen, Pickup, & Tsangaridou, 2012). A study by (Hardy, King, Espinel, Cosgrove, & Bauman, 2010, p. 168) on physical activities and school nutrition highlighted that most of the students are supposed to master basic move skills within the age of 9-10 years prior to successful transition to more advanced skills, particularly in sport stages. Fundamental move skills can actually be learned, practiced, and strengthened in physical education. To be able to have good physical activities and to focus on a certain type of sport, children need to have good mastery of gross motor competences. For children, such competences play an important role for their healthy physical and social development and for the physical activity in their daily life (Burns, Fu, Fang, Hannon, & Brusseau, 2017, p. 2).

According to (Maina, Maina, & Hunt, 2016, p. 29), Schwab and Dustin (2014), participation in non-traditional games and activities promote long life recreation, decision making, problem solving, and communication skills. Mercer, Sariscsany, Abourezk, and Romack (2012) showed that non-traditional activities can have a positive effect on students' interests, cognition, and activity levels in physical education. If teachers promote students' critical thinking in physical education, the students will be able to participate in meaningful experiences application in a variety of contexts (Lodewyk, 2009). There are a lot of competences to develop through various games for children as their physical, mental, social experiences in playing games are believed to be useful for their future. (Barnett, Hinkley, Okely, & Salmon, 2013) agreed that one can acquire fundamental levels of basic move skills through exploration and opportunities to perform, get involved, and have supporting environments, as well as have the required tools and positive strengthening enabling them to train and learn. However, not every child has access to an ideal condition encouraging them to have appropriate learning levels or to have independent learning even when they have supportive environments.

One of the possible strategies to cope with such an issue is learning through games namely game-based approach (GBA). In GBA, (Jarrett & Light, 2018, p. 2), theoretically pointed out that construction of knowledge occurs through students' active involvement on games and game development. Though this experience, students are going to develop and construct their knowledge on the issues given. In addition, games should also be designed using supportive media (Rovegno & Bandhauer, 2013) stated that the structure of games involves such components as tools and equipment, the number of players needed, limits, rules, and skills necessary for the success of the games. A study by (Wick et al., 2017) also found that limitation of research in the future has not had strategies in improving basic move skills. In this study, the researchers attempted to create a game model in enhancing students' basic move skills. Additionally, (Foulkes et al., 2017) suggested that the duration of games needs to be longer and their frequency needs to be higher to be able to be effective. It is also recommended that future students need to focus on effective intervention with the right amount of duration to increase basic move skills. Basic move skills are influence by a lot of factors; one of which is the physical activities performed (Chan, Ha, Ng, & Lubans, 2018). To this relation, (Behan, Belton, Peers, O'Connor, & Issartel, 2019) pointed out that

further studies should try to explore basic move skills through children's physical activities and improve their physical fitness at the same time.

This strategy is a potential to improve basic move skills among children in elementary schools. Games integrated with media promoting basic move skills are ball games, net games, court/ field games, climbing games, and so on. As (Collins, Booth, Duncan, & Fawkner, 2019) suggested that further studies should investigate resentence training which can possibly be played in improving basic move skills focusing on process and products whose orientation as products, this study aimed to design a basic skill move model through games. Moreover, this study also attempts to give students with different background an equal opportunity in improving their basic move skills.

2. Method

This study employed an experimental method featuring pretest and posttest control group design. The participants were 245 students with the age average of male students by ± 9.1 years and that of male students by ± 9.2 years. The participants came from four different areas namely *Kota Bandung, Kabupaten Bandung, Kabupaten Bandung Barat,* and *Kota Cimahi*. This study administered a cluster random sampling and each session of the experiments lasted for 90 minutes (there were 16 sessions in total). Therefore, the participants of this study joined 48 games in game-based approach learning.

Table 1 Game-Based Approach Activities

No	Activity	Session	Time
1	*Lempar Paket, Gulat Semut, Tarik Tambang.*	Session 1	90 Minutes
2	*Cerita Pendek, Lewati Lorong, Merayap Menggelinding*	Session 2	90 Minutes
3	*Menghindari Roket, Menghindari Komet, Hindari Kucing*	Session 3	90 Minutes
4	*Jadi Pesawat, Jadi Bangau, Kereta Api Satu Kaki*	Session 4	90 Minutes
5	*Kuli Panggul, Kereta Api, Jalan di Atas Balok.*	Session 5	90 Minutes
6	*Cerita Jalan Hewan, Putar-Putar, Ular-ularan,*	Session 6	90 Minutes
7	*Kucing Tikus, Mengambil Bintang, Lompat Balok*	Session 7	90 Minutes
8	*Tumpuk Lompat, Balok Berjalan, Ambil Bintang*	Session 8	90 Minutes
9	*Parasut, Lingkaran Binatang, Jalan Kepiting*	Session 9	90 Minutes
10	*Lompat ditempat, Lompat Tali dan Lompat Tali Berjalan*	Session 10	90 Minutes
11	*Jalan Lurus, Jatuhakan Benteng, Bola Pantul*	Session 11	90 Minutes
12	*Lempar Bulan, Lempar Bintang, Tangkap Bulan*	Session 12	90 Minutes
13	*Tangkap Bintang, Saling Serang, Rolling Traping*	Session 13	90 Minutes
14	*Pukul Lari, Segitiga, Mini Softball*	Session 14	90 Minutes
15	*Melayang, Lempar Bumi dan Mini Volley*	Session 15	90 Minutes

No	Activity	Session	Time
16	*Tendang Kejar Tahan, Bolak Balik*	Session 16	90 Minutes

The instrument this study used to measure children's basic move skills was Test Gross Motor Development 2nd Edition (TGMD2) (Ulrick, 2000), featuring two tests locomotor (run, gallop, hop, leap, horizontal jump, slide) and object skills (striking a stationary ball, stationary dribble, kick, catch, overhand throw, and underhand roll). The data were then analyzed using SPPS 21.

3. Results

Game-based approach (GBA) has been implemented for 16 sessions. Through the sessions, the progress of both the experimental and control groups is identifiable. The results of the implementation is presented in Table 2.

Table 2

Results of Paired Sample Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 Posttest_Eks - Pretest_Eks	25.73469	5.83859	.37301	24.99996	26.46943	68.991	144	.000
Pair 2 Posttest_Con - Pretest_Con	1.83333	3.50930	.22652	1.38709	2.27957	8.093	139	.000

Table 2 shows that the mean was 25.74 indicating the score difference of the results between the pretest and posttest of basic move skills after the treatment. In addition, the statistical data show that the t=68.991 with df=244 at p-value=0.000<0.05 meaning that H_0 is rejected. In other words, there is a significant difference of basic move skills after the treatment (GBA learning model). Furthermore, it is shown that the pretest and posttest score difference between the experimental and control groups is 1.833 and the statistical data are t=8.093 with df=239 at p-value=0.000<0.05 indicating that Ho is rejected. In other words, there is significant difference of conventional learning towards basic move skills.

4. Discussion

The results showed that there had been changes in both the experimental group and the control group. Treatment using the game-based model significantly improved students' basic movement skills. This was likely to occur as through the game students feel happy so that what is done is done unconsciously through various physical activities (Fitri, Sari, Syechabudin, & Asmawi, 2016). In addition, in the game-based approach, students are given the freedom to express their abilities towards the learning objectives that have been set. By playing, it is hoped that students can have creativity and initiative to solve problems that arise during the learning process. Through play, a competitive element is also developed, so that students compete with each other to show their abilities (Prasetyo, 2016). (Frost et al., 2012) noted that children enjoy these group activities and sports, are proud of their uniforms, and look forward to the games and performances. If handled properly by adults, exercise can have positive effects, including the social experience of being part of a group. Nonetheless, sports activities are organized and led by adults, and physical activity is limited to those related to sport.

The physical activity that is directed by the teacher plays an important role in gross motoric development because the teacher can accompany the students in various activities that ensure them to develop the desired physical movement. Their physical development can be evaluated and attention is paid to correcting inappropriate movements that may become obstacles for the child later in life when participating in sports and recreational physical activities.

According to (Butler & Griffin, 2010), learning skills through games enables the learners to get a deeper understanding of how to apply their skills in game situations. This ability is useful for communicating and applying knowledge in a number of different situations. This is one of the main principles of physical literacy. In the meantime, (Roach & Keats, 2018) argued that the active play approach provides more advantages to basic movement skills. This indicates that playing actively can improve basic movement skills. In addition, basic movement skills are also influenced by physical activity and gender. (Jarvis et al., 2018) identified the gender-specific components of physical activity that differentiate children with different levels of basic movement skills.

Through proper physical activity basic movement skills can be improved. Apart from that gender also affects basic movement skills. Physical activity guidelines and position statements emphasize the importance of 'activities to strengthen muscles and bones' and research shows that resistance training impacts basic movement skills (Collins et al., 2019). Using such guidelines employing the game-based model is able to significantly improve basic movement skills. The game-based model is a guide in carrying out physical activities during school breaks. The findings from this study suggest that children who were more competent in basic movement skills spent more time engaging in moderate to vigorous physical activity. Children who were more competent in object control skills engaged in more moderate to vigorous physical activity during lunch breaks and school breaks. Additionally, children who demonstrated higher levels of competence in locomotor skills and object control skills engaged in more moderate to vigorous physical activity after school. (Cohen, Morgan, Plotnikoff, Callister, & Lubans, 2014). These findings indicate that, the amount of physical activity determines the increase in basic movement skills. As in this study, physical activity is a model of playing as a physical activity. In addition, every physical activity carried out for 60 minutes uses moderate to strong intensity according to the recommendations of the WHO.

Group play and briefing requires children to interact with their peers and encourage them to cooperate and develop teamwork. Games can also be used to inject fun and enjoyment and add variety to warm-up and cool-down activities (Ministry of Education, 2013). Through this game students can be trained and improve basic movement skills in a fun way.

The game-based model has the following potentials: (1) facilitating the development of technical skills and tactical knowledge; (2) empowering children to learn independently and responsibly; (3) assessing tactical transfers across games; and (4) increase the fun and enjoyment of playing games (Wang & Ha, 2013). The game-based approach is loaded with teaching assignments given to students, stimulating students to think and discover for themselves the reasons that underlie their performance. This approach provides a lot of understanding to students of the benefits of each of their actions and behavior. Thus students are given the widest possible opportunity to assess themselves and their abilities during the learning process (Singgih, 2012). Games provide opportunities to gain knowledge about something, train imagination, provide opportunities to interact with the environment, and to express oneself in ways that are socially acceptable. (Suherman, 2014) as students will be able to improve their basic movement skills through those games.

As children develop, long before they turn into grown-ups, it is important to develop basic skills such as agility, balance, coordination, and speed and to learn them in a fun way. Some sports such as gymnastics, diving and figure skating require specialization at a young age. However, most lifelong sports are end-specialty sports, such as football, basketball and volleyball. For this sport, specialization should not occur before the ages of 12 to 15. For most sports, children benefit from having a thorough experience in a variety of activities. (Byl & Kloet, 2014). By having basic movement skills, it will be easier for someone to adapt to sports branching techniques. Good adaptation will make it easier for a person to carry out various physical activities. This study develops a basic motion learning model through playing activities through various games. Students feel happy to participate in activities during physical education learning. And through the significant effectiveness test, the basic motion model through play activities can improve basic movement skills. The relationship in this study has not yet implemented any advanced technology in delivering material to students. Future research is expected to integrate games with technology in Physical Education learning. It is expected that the students are most likely to be actively involved in physical education activities.

References

1. Barnett, L., Hinkley, T., Okely, A. D., & Salmon, J. (2013). Child, family and environmental correlates of children's motor skill proficiency. Journal of Science and Medicine in Sport, 16(4), 332–336. https://doi.org/10.1016/j.jsams.2012.08.011
2. Behan, S., Belton, S., Peers, C., O'Connor, N. E., & Issartel, J. (2019). Moving Well-Being Well: Investigating the maturation of fundamental movement skill proficiency across sex in Irish children aged five to twelve. Journal of Sports Sciences, 37(22), 2604–2612. https://doi.org/10.1080/02640414.2019.1651144
3. Burns, R. D., Fu, Y., Fang, Y., Hannon, J. C., & Brusseau, T. A. (2017). Effect of a 12-Week Physical Activity Program on Gross Motor Skills in Children. Perceptual and Motor Skills, 124(6), 1121–1133. https://doi.org/10.1177/0031512517720566
4. Butler, J. I., & Griffin, L. L. (2010). More Teaching Games for Understanding. New York, NY: Human Kinetics.
5. Byl, J., & Kloet, B. V. (2014). Physical education for homeschool, classroom, and recreation settings : 102 games with variations. United States of America: Human Kinetics.

6. Chan, C. H. S., Ha, A. S. C., Ng, J. Y. Y., & Lubans, D. R. (2018). Associations between fundamental movement skill competence, physical activity and psycho-social determinants in Hong Kong Chinese children. Journal of Sports Sciences, 00(00), 1–8. https://doi.org/10.1080/02640414.2018.1490055
7. Cohen, K. E., Morgan, P. J., Plotnikoff, R. C., Callister, R., & Lubans, D. R. (2014). Fundamental movement skills and physical activity among children living in low-income communities: A cross-sectional study. International Journal of Behavioral Nutrition and Physical Activity, 11(1), 1–9. https://doi.org/10.1186/1479-5868-11-49
8. Collins, H., Booth, J. N., Duncan, A., & Fawkner, S. (2019). The effect of resistance training interventions on fundamental movement skills in youth: a meta-analysis. Sports Medicine - Open, 5(1). https://doi.org/10.1186/s40798-019-0188-x
9. Evridiki, Z., Liukkonen, J., Pickup, I., & Tsangaridou, N. (2012). Early steps physical education curriculum : theory and practice for children under 8. New York: Human Kinetics.
10. Fitri, E., Sari, N., Syechabudin, K., & Asmawi, M. (2016). Penerapan Permainan Kecil Untuk Meningkatkan Keterampilan Gerak Dasar Berlari Siswa Sekolah Dasar. JURNAL PENDIDIKAN JASMANI DAN ADAPTIF, 16–22.
11. Foulkes, J. D., Knowles, Z., Fairclough, S. J., Stratton, G., O'Dwyer, M., Ridgers, N. D., & Foweather, L. (2017). Effect of a 6-Week Active Play Intervention on Fundamental Movement Skill Competence of Preschool Children: A Cluster Randomized Controlled Trial. Perceptual and Motor Skills, 124(2), 393–412. https://doi.org/10.1177/0031512516685200
12. Frost, J. L., Wortham, S. C., Reifel, S., Cape, A., London, T. D., Milan, M., … Tokyo, T. (2012). Play and Child Development. From American Playgrounds Courtesy of Redeemer Lutheran School Courtesy of Dr. Rick Worch David J. Phillip/AP Wide World Photos Image Source (Vol. 11). United States of America: Pearson. Retrieved from http://docshare03.docshare.tips/files/27020/270200789.pdf
13. Hardy, L., King, L., Espinel, P., Cosgrove, C., & Bauman, a. (2010). NSW Schools Physical Activity and Nutrition Survey (SPANS) 2010 Full report, 168–201.
14. Jarrett, K., & Light, R. (2018). The experience of teaching using a game based approach. European Physical Education Review, 1356336X1775302. https://doi.org/10.1177/1356336X17753023
15. Jarvis, S., Williams, M., Rainer, P., Jones, E. S., Saunders, J., & Mullen, R. (2018). Interpreting measures of fundamental movement skills and their relationship with health-related physical activity and self-concept. Measurement in Physical Education and Exercise Science, 22(1), 88–100. https://doi.org/10.1080/1091367X.2017.1391816
16. Maina, M. P., Maina, J. S., & Hunt, K. (2016). Initiative Games in Physical Education: A Practical Approach for Teaching Critical Thinking Skills — Part 1. Strategies, 29(3), 28–33. https://doi.org/10.1080/08924562.2016.1159151
17. Ministry of Education, S. (2013). Motor Skill Development (Vol. 1). Singapore.
18. Prasetyo, K. (2016). Penerapan Pendekatan Bermain Untuk Meningkatkan Hasil Belajar Lompat Jauh Gaya Jongkok Pada Siswa Kelas 5 Sekolah Dasar. Scholaria : Jurnal Pendidikan Dan Kebudayaan, 6(3), 196. https://doi.org/10.24246/j.scholaria.2016.v6.i3.p196-205
19. Roach, L., & Keats, M. (2018). Skill-Based and Planned Active Play Versus Free-Play Effects on Fundamental Movement Skills in Preschoolers. Perceptual and Motor Skills, 125(4), 651–668. https://doi.org/10.1177/0031512518773281
20. Singgih, H. (2012). Aplikasi Pendekatan Bermain untuk Meningkatkan Efektivitas Pembelajaran Bola Voli Kelas VIII SMP Al Islam 1 Surakarta Oleh : Singgih Hendarto 1, 309–322.
21. Suherman, M. M. (2014). Efektivitas Strategi Permainan Dalam Mengembangkan Self-Control Siswa.
22. Ulrick, D. A. (2000). Test of Gross Motor Development 2.
23. Wang, L., & Ha, A. S. (2013). Three groups of teachers' views, learning experiences, and understandings of teaching games for understanding. Physical Education and Sport Pedagogy, 18(3), 336–350. https://doi.org/10.1080/17408989.2012.666789
24. Wick, K., Leeger-Aschmann, C. S., Monn, N. D., Radtke, T., Ott, L. V., Rebholz, C. E., … Kriemler, S. (2017). Interventions to Promote Fundamental Movement Skills in Childcare and Kindergarten: A Systematic Review and Meta-Analysis. Sports Medicine, 47(10), 2045–2068. https://doi.org/10.1007/s40279-017-0723-1