Original Article

The Effectiveness of Traditional Games intervention program in the Improvement of Form One School-Age Children's Motor Skills Related Performance Components

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Abstract:

As children age, motor performance develops. Motor performance abilities enable children to process information in handling specific task efficiently. Although children develop motor skills in a variety of physical activities, it could be, however, easily achieved when they engage in voluntary activities in conformity with their interests. Traditional games offer the opportunity for children to play and officiate the rules without any constraint. The current study intends to explore the effectiveness of the traditional games intervention program in the improvement of form one school-age children's motor skills related performance components. A total number of 40 form one Malaysian student [male (n=20) and female (n=20)] with age range of 12-13 selected randomly participated in the study. The quasi-experiment method was applied in the study and experiment group (n=40) went through traditional games intervention which consisted of performing selected traditional games for 60 minutes, three times weekly for eight weeks. The pre-test (before treatment), mid-test (week fourth) and post-test (week eight) data were collected and analysed using MANOVA repeated measure. The results indicate a significant improvement of motor performance through traditional games intervention [$F(8, 29) = 1704.16, p < .05$]. Follow-up tests also show that the traditional games intervention is a factor [$F(12, 105) = 1.99, p < .05$] to agility [$F(3, 36) = .50, p > .05$], reaction time [$F(3, 36) = .51, p > .05$], speed [$F(3, 36) = 3.64, p < .05$] and balance [$F(3, 36) = .02, p > .05$]. There is sufficient evidence to conclude that Malaysian based traditional games are effective in improving motor abilities of school-age children.

Key Words: - Traditional games, Motor performance-related components, Form one school –age children, Quasi-experimental

Introduction

Physical capability is central to cognitive improvement during early adolescence. Montessori (1967) expressed that, for figuring out how to achieve its maximum capacity, it must be straightforwardly associated with physical development for the child. Motor skills are a crucial segment of development for all children. Gallahue (1993) explained that movement is at the extremely focus of adolescents' lives. It is an essential feature of all parts of their advancement, either in the motor, cognitive, or affective domains of human behaviour. It is, therefore, relevant to say that to deny youngsters the chance to receive the numerous rewards of standard, vivacious physical action is to deny them the chance to encounter the delight of productive development, the well-being impacts of development, and a lifetime as confident as well as competent movers. However, Piaget (1950) reported that from the primary days of life, children start utilising their bodies to find out about their general surroundings. At that age, they need physical activity to build strength, coordination, and confidence which will consequently lead them to lay the groundwork for a healthy lifestyle through gaining more control over how active they are. This can be achieved easily when the children are engaged in physical activities that are both stimulating and joyful.

Traditional games, also known as traditional sports, are hereditary heritage and played very often after harvest season usually by farmers (Addy Putra, Shahrul, Nor Ziratul & Amirul, 2014; Ekunsanmi, 2012; Tatira, 2014). Traditional games were inherited from the older generation and passed on to the young generation through oral, sound or demonstrations. Traditional games have a racial and cultural value (Civarello, 2006) and were an integral part of the recreational activity (Addy Putra et al., 2014; Mohd. Salleh, 2005) perform for pleasure intent and serenity of mind (Ekunsanmi, 2012; Sahay, 2013).

Among the various types of traditional games played by the older generation in Malaysian perspective, were sepak bulu ayam, burung masuk sarang, gasing, marbles, petik mata, congkak, kite, batu seremban, buat rumah batu, galah panjang, tok harimau and tor duduk (Aziz & Wan Ramli, 1994; Shafiee, 2008). These traditional games are played at no cost for buying any material because most of the materials can be obtained from the surroundings or recycled. For example, the batu seremban game uses only stones. In fact, among the traditional games, no materials are needed at all such as Tok Harimau, Tor Duduk and Tor Nusut (Aziz & Wan Ramli, 1994).

Although, a number of studies have been carried out and have proven that traditional games provide various benefits such as enhancing coarse and delicate motor skills (Akbari, Abdoli, Shafizadehkenari, Khalaji, Hajihosseini, & Ziaee, 2009; Borhannudin, Saidon, Kok & Bahaman, 2013) as well as improving cardiovascular health (Rauber, Boullousa, Carvalho, Moraes, Sousa, Simoes, & Campbell, 2014), yet it is becoming more and more unpopular and less practiced by the younger generation these days. The reason partly, for the decreasing popularity of traditional games among the younger generation nowadays is the rapid industrial development, where the young people are more interested in watching television, playing electronic games i.e. video and computers, at home regardless of considering the time wasted (Akbari et al., 2009; Ekunsanmi, 2012).

Traditional games formerly were very popular and played in the evening by a wide range of ages (Ekunsanmi, 2012; Sahay, 2013) Nowadays; the younger generation more interested in indulging in a variety of high-tech toys like video games and computers as well as their habit of watching television more than the desire to play in sports (Addy Putra et al., 2014; Akbari et al., 2009; Ekunsanmi, 2012). A study conducted by Ekunsanmi (2012), reported that out of the 77% who used to play the traditional *Yoruba* game of Arin, only 18% are still practising it. This is due to lack of exposure to traditional games of the current generation of the importance of these traditional games to both their health and sporting abilities.

Determination of the types of motor fitness components built through this traditional game is important because the movement, concentration and adaptation in a skill can be developed through a wide range of traditional games (Lazar, 2005; Nyota & Mapara, 2008; Piech & Cieslinski, 2007; Rouhi, 2012; Sahay, 2013; Tatira, 2014). Thus, the study of the contribution of each type of traditional game of physical fitness in a particular motor fitness should be carried out to provide information to assisting stakeholders such as physical education teacher, coaches for improving healthy life and optimisation of sporting performance in a cost effective manner. Hence the purpose of the current study is to explore the effectiveness of the traditional games intervention program in the improvement of form one school-age children's motor skills related performance components.

Materials and Methods

Participants: 80 respondents (20 males and 20 females) was distributed to the experimental group according to the types of traditional games intervention programme with the same 5 number of people for each gender making it 10 people (5 men and 5 women) for each group.

Selected traditional games for the study

Among the types of traditional games selected by the researcher as intervention program are *galah panjang*, *buat rumah batu*, *tok harimau* and *tor duduk*. The *galah panjang*, also known as *gelap cerah* game, is a type of game that requires the player to cross the lines of an obstacle course that aims to test the skill of the player running past the obstacles. The *Buat Rumah Batu* or *ketingting* is a game where one throws a *kor* onto a partition and then hops onto each of the partitions with only one leg before retrieving the *kor* (Aziz Wan Ramli, 1994). Likewise, for *Tor Duduk*, which is also known as *Acikai Duduk*, and the *Tok Harimau* game aims to test the efficiency of the player to catch other players. The number of players in these games are not limited, that is, the more the players the more it could be enjoyed (Aziz & Wan Ramli, 1994).

Data collection procedure

To measure motor performance, 30 feet shuttle run test, Nelson response test, 30-meter sprint test and Modified Bass test were selected. All measurements were taken at the beginning of the programme (pre-test), and the end of week 4 (mid-test) and 8 (post-test). The programme included an eight week period of selected traditional games. The length of each session was 60 minutes in three days a week and consisted of three parts whereas, warm-up, traditional games intervention programme and cooling down.

Statistical Analysis

In order to standardise each unit of motor fitness test, transformation process had been employed to convert raw scores of various units to a standard form of scores so that they are easy to be analysed as suggested by the previous researcher (Ahmad, 2003). Descriptive and inference statistics were performed using SPSS version 20 for windows. To organise and summarise classification of raw scores, descriptive statistics (mean and standard deviation, drawing tables) and the multivariate analysis of variance (MANOVA) repeated measure was used at a confidence level of $p \leq 0.05$.

Result

Table 1: Descriptive statistics of achievements according to motor fitness component.

Component	n	Pre		Mid		Post	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Agility	10	10.22	0.39	10.13	0.41	10.01	0.42
Reaction time	10	2.49	0.22	2.39	0.22	2.28	0.24
Speed	10	6.37	0.26	6.22	0.28	6.13	0.31
Balance	10	63.30	2.42	77.90	2.35	97.20	2.67

Table 1 shows the descriptive statistics of raw data achievements according to motor performance in pre, mid and post-test. The mean, standard deviation and number of the parameters are shown.

Table 2: The MANOVA with repetitious measurement to determine the relation between motor fitness performance with the traditional games intervention programme.

Effect		Value	F	Hypothesis df	Error df	p
Within Subjects	Pillai's Trace	.998	1704.158 ^b	8.000	29.000	.000

Table 2 projects the MANOVA analysis test. The Multivariate Pillai's trace indicates $F(8,29) = 1704.16$, $p < .05$ which revealed the significant relation between motor performance and traditional games intervention programme.

Table 3: The MANOVA with repetitious measurement to determine the effect of traditional game intervention programme with the motor performance.

Effect		Value	F	Hypothesis df	Error df	p
Between Subjects	group Pillai's Trace	.556	1.99	12.000	105.00	.032

Table 3 shows the MANOVA analysis test. The Multivariate Pillai's trace t indicates $F(12,105) = 1.99$, $p < .05$ which revealed the effectiveness of traditional game intervention programme to the motor performance.

Table 4: Analysis Between-Subject Effects to determine the differentiate effect of each traditional game intervention on the agility component.

Source	Type III Sum of Squares	df	Mean Square	F	p
Group	153.99	3	51.33	.495	.688
Error	3731.55	36	103.65		

Table 4 shows the analysis between-subject effect test to determine the differentiate effect of each traditional game intervention on the agility component. The result indicates $F(3,36) = .50$, $p > .05$, which revealed that there is no different effect of each traditional game intervention on the agility component.

Table 5: Analysis Between-Subject Effects to determine the differentiate effect of each traditional game intervention on the reaction time component.

Source	Type III Sum of Squares	df	Mean Square	F	p
Kumpulan	156.29	3	52.09	.508	.680
Error	3695.64	36	102.65		

Table 5 shows the analysis between-subject effect test to determine the differentiate effect of each traditional game intervention on the reaction time component. The result indicates $F(3,36) = .51$, $p > .05$, which revealed that there is no different effect of each traditional game intervention on the reaction time component.

Table 6: Analysis Between-Subject Effects to determine the differentiate effect of each traditional game intervention on the speed component.

Source	Type III Sum of Squares	df	Mean Square	F	p
Group	899.47	3	299.82	3.64	.022
Error	2969.12	36	82.48		

Table 6 shows the analysis between-subject effect test to determine the differentiate effect of each traditional game intervention on the speed component. The result indicates $F(3,36) = 3.64$, $p < .05$, which revealed that there is a different effect of each traditional game intervention on the speed component.

Table 7: Analysis Between-Subject Effects to determine the differentiate effect of each traditional game intervention on the balance component.

Source	Type III Sum of Squares	df	Mean Square	F	p
Group	4.33	3	1.44	.017	.997
Error	3074.46	36	85.40		

Table 7 shows the analysis between-subject effect test to determine the differentiate effect of each traditional game intervention on the balance component. The result indicates $F(3,36) = .02, p > .05$, which revealed that there is a different effect of each traditional game intervention on the balance component.

Table 8: Descriptive statistics of the total different effect of motor performance from pre to post test of the traditional games intervention programme.

Test	Group	Different performance (<i>M</i>)		
		pre-mid	mid-post	total
10 metres shuttle run	<i>Tor duduk</i>	2.81	3.91	6.72
Nelson response for leg	<i>Galah panjang</i>	5.15	6.88	12.03
30 metres sprint	<i>Tok harimau</i>	4.75	6.46	11.20
Modified Bass	<i>Buat rumah batu</i>	57.24	86.26	143.50

Table 8 shows the descriptive statistics of the total different effect of motor performance from pre to post test of the traditional games intervention programme. The result indicates that agility component contributed more by *tor duduk*, reaction time by *galah panjang*, speed by *tok harimau*, while balance by *buat rumah batu*.

Discussion

The overall results of the current study demonstrated that traditional game intervention programmes have a significant relationship with motor fitness performance among form one school age children (see Table 2). The results indicated that the traditional game intervention could be used to improve motor fitness performance i.e. fitness, speed, reaction time, speed and balance components. These findings support the findings of Rouhi (2012) and Pasand et al., (2014) on the effectiveness of the traditional games in enhancing agility, speed and balance.

Moreover, the results of the present study found that motor fitness performance increased among the intervention group in the fourth week of the mid-test. In fact, further improvement was observed through the eighth week of the post-test. This proves that the traditional game intervention program was highly effective to improve the motor fitness performance (agility, reaction time, speed and balance) among the children. The results of this study support the results of the findings carried out by Cheung and Ng (2003) where they found that the physical fitness level of 30 sampled adolescence of aged 14 years to 18 years have shown an increase in the fourth and eighth week through the use of circuit training method.

Our finding also found that traditional games intervention provided significant effects ($p < 0.05$) on the overall motor fitness performance of the children (see Table 3). This demonstrated that traditional games intervention is a factor to improving motor fitness performance. However, the results of the analysis found that traditional game interventions gave the same effect for agility, reaction time and balance component ($p > 0.05$). The reason being, the need for agility in all traditional games. During the game, the children strive to avoid being 'terminated' by the opposing side in a game of *Galah Panjang*, *Tok Harimau* and *Tor Duduk*, while *Buat Rumah Batu* game used agility to spin the body by changing the feet position in partitions 4 and 5 as well as 7 and 8 compartments. This finding is in concord with that of previous researchers who reported that agility could be affected by strength, speed, balance and coordination factors (Miller, 1998; Stafford-Brown et al., 2007) as well as skill (Cable, 1998). Similarly, Miller (1998), inferred that the achievement level for agility component is also influenced by breed factors and can be improved by adding the capability of strength, speed, balance and coordination either through teaching, training or practice drills (Ahmad, 2004).

Traditional games intervention program in our study also provides the same effects on the motor fitness performance in reaction time component (see Table 5). The reaction is considered faster in the study faster when one stimulation sign were received compared to multiple stimulations because then there would be many options for a response (Stafford-Brown et al., 2007). In traditional games, reaction time play a central role to escape from the control of or being caught by the opposing team in the traditional games of *Galah Panjang*, *Tok Harimau* and *Tor Duduk*. The players need to be agile, quick and balanced while producing relevant moves with environmental stimuli. Meanwhile, the reaction time in *Buat Rumah Batu* game is when the player drops and catches the *Kor* that was placed on the head before throwing the *Kor* to get a 'home'.

However, the researchers found that all traditional games intervention programs for *Galah Panjang*, *Buat Rumah Batu*, *Tok Harimau* and *Tor Duduk* yielded significantly different effects on the motor fitness performance for speed component (see Table 6). The differences were due to the differences in the aspects of the movement space size, for example, the field/court sizes of the *Tok Harimau* and *Tor Duduk* are wider compared to the size of the partitions of *Galah Panjang* and *Buat Rumah Batu*. The action of the player to avoid from

being caught by the opposing side in the games of *Tok harimau* and *Tor Duduk* game is one of the requirements of speed in traditional games. The speed component is closely related to the strength component and is one of the important components in most games and sports, where this component is very important in events involving acceleration or keeping away from the opposing side (Ahmad, 2004).

The effectiveness of traditional games intervention program is also found to have significant effects on motor fitness performance for balance component (see Table 7). This is due to the balance component being affected by the efficiency of the visual information integration to the semi-circular vestibular system and muscle receptors (Stafford-Brown et al., 2007; Woollacott Shumway-Cook, 1990), as well as the strength of the legs (Ahmad (2004). For example, in the game of *Buat Rumah Batu*, the one-legged jumping action requires the strength of the leg to maintain balance while jumping to each of the following partitions. Therefore, the overall findings of this study support the findings of Clements et al. (2008), Eichberg (2005), Pasand et al. (2014), Rouhi (2012), Sahay (2013) and Tatira (2014), that traditional games contribute differently to physical fitness.

The total mean can identify the difference in contributions of the traditional game intervention program (Galah Panjang, Buat Rumah Batu, Tok Harimau and Tor Duduk) on the motor fitness performance (agility, reaction time, speed and balance) in all the three tests (pre to post test). The overall mean results show that intervention game for *Tor Duduk* provided the most performance improvement for agility component. The reason being in *Tor Duduk*, players have the opportunity to fake moves to avoid being 'touched' or 'terminated' by the opposing team player and the distance between opposing players are farther apart in comparison to other games such as *Tok Harimau*.

Galah Panjang provided the most motor fitness performance enhancement in reaction time. According to Baker et al. (2007), the reaction time is the time between the start of the movement and stimulation. Based on the observations made by the researchers during the study, it was found that in the *Galah Panjang*, many children applied the reaction time to respond every time an opponent player tried (stimulation) to touch opposing teams from crossing the line.

Based on the findings of the study, the researcher found that the *Tok Harimau* contributed to an increase in the motor fitness performance achievement in speed which is paramount. This could not be denied because of the wider *Tok Harimau* game space or court size and the need for the test samples to quickly escape from being caught by *Tok Harimau* and for *Tok Harimau* themselves to quickly turn and chase or pursue other players. Unlike *Tor Duduk*, although the size of the field for *Tor Duduk* is the same as that of *Tok Harimau*, due to the different way the games were played. Whereas, the players were already quite a distance away from the chasing opposing team player before the game even started as compared to the players in *Tor Harimau* game.

Balance plays a very important role in enabling execution of precise and exact movement in games and sports (Baker et al., 2007). The results of the study found that *Buat Rumah Batu* is the contributors to balance component performance improvement. Based on observation that was carried out, the researcher found that in the game of *Buat Rumah Batu* game, the body balance is very critical because the players have to maintain stability or body position to enable them to jump to each following partitions and the challenge in changing the Earth's gravity center position also the strength of the legs so as to enable them to jump one-legged throughout the game.

Conclusion

The present study revealed that traditional games intervention program which are *Galah Panjang*, *Buat Rumah Batu*, *Tok Harimau* and *Tor Duduk*, are very efficient in improving motor fitness performance, i.e., agility, reaction time, speed and balance. In fact, each traditional game intervention also showed differences in the effect of each component of motor fitness. Based on these results, it, therefore, recommended to coaches, physical education teachers and any physical fitness practitioner to apply these traditional games intervention programmes to increase their motor fitness performance. The tradition could also be revived by allowing children play every evening as it has been practised initially by the older generation.

Conflicts of interest - The authors have no conflicts of interest to declare.

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