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Model Comparison Exercise Circuit Training Game and Circuit Ladder Drills to Improve Agility and Speed

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History Article

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Abstract

The purpose of this study was to compare: (1) the effect of circuit training game and circuit ladder drill for the agility; (2) the effect of circuit training game and circuit ladder drill on speed; (3) the difference effect of circuit training game and circuit ladder drill for the speed (4) the difference effect of circuit training game and circuit ladder drill on agility. The type of this research was quantitative with quasi-experimental methods. The design of this research was Factorial Design, with analysing data using ANOVA. The process of data collection was done by using 30 meters sprint speed test and shuttle run test during the pretest and posttest. Furthermore, the data was analyzed by using SPSS 22.0 series. Result: The circuit training game exercise program and circuit ladder drill were significant to increase agility and speed (sig 0.000 < α = 0.005) Group I, II, III had significant differences (sig 0.000 < α = 0.005). The mean of increase in speed of group I = 0.20 seconds, group II = 0.31 seconds, and group III = 0.11 seconds. The average increase agility to group I = 0.34 seconds group II = 0.60 seconds, group III = 0.13 seconds. Based on the analysis above, it could be concluded that there was an increase in the speed and agility of each group after being given a training.

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INTRODUCTION

According to Santosa and Dikdik (2013: 21) physical fitness is a state of physical ability that can adjust the body function to a certain physical task and or to the environment circumstances which must be overcome in an efficient way, without excessive fatigue and have fully recovered before the same task coming the next day. Physical fitness is the dynamic degree of a person which becomes the basic physical ability to be able to carry out the task that must be done.

Physical conditioning plays a very important role to maintain or improve the degree of physical fitness. The degree of a person's physical fitness determines the physical ability to perform daily tasks. The higher the degree of one's physical fitness the higher the physical work ability. In other words, the results of his work more productive if the physical fitness is increasing.

In the training programs, these circuit exercises usually use simple machine tools or common equipment. Generally, the distance of each station is about 15 seconds to 3 minutes to keep the muscles from tiring. The circuit training is a combination of all physical elements. The exercises can be running up and down stairs, running sideways or backwards, throwing balls, hitting balls with rackets, jumping, various forms of weight training and so on. The form of the exercise is usually arranged like a circle (Yunyun., 2012: 14)

Based on the explanation, the researcher intends to conduct experiments with two models of different circuit trainings. That is by modifying the circuit with game exercises and circuit training with a combination of the ladder drill. The study wanted to know the comparison of two kinds of circuit trainings to improve agility and speed of the grade V students in SDN Kandangan III Surabaya.

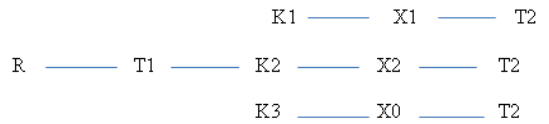
METHOD

The population in this study were all grade V students of SDN Kandangan 3 Surabaya in the academic year of 2015/2016. The total population in this study were 80 children, with an age range of 11-12 years. The number of samples in this study were 30 boys taken randomly from the same age and sex category. Simple Random Sampling was used in this study. Subsequently, the sample was divided into three groups: circuit game exercise group, circuit ladder drill exercise group, and control group. In the grouping, ordinal pairing techniques was used and the sample placement in each group follows the pattern of "S".

This research took place at the Sports Field of SDN Kandangan 3 Surabaya. This study lasted 8 weeks, the first week of preparation and pretest, 6 weeks for treatment 3 times a week (18 meetings) and last week for posttest. The measurement of agility used back and forth run test. The measurement of speed used a 30 meter run test

In accordance with the hypothesis and research type used in this study, paired sample test and Analysis of Variance (Anova) with 5% significance level using Statistical Product and Service Solution (SPSS) 22.0 program were used to know the effect of circuit training game and circuit ladder exercise to improve agility and speed on grade V male students in SDN Kandangan III Surabaya.

This was a quantitative research with Quasi Experiment and using Randomized Control Group Pretest-Posttest Design.



Source : (Maksum, 2012:98)
Keterangan :
R : *Randomized*
T1 : Pretest
K1 : Group 1 (Circuit Game Training Group)
K2 : Group 2 (Circuit Ladder drill Group)
K3 : Group 3 (Control Group)
X1 : Circuit Training Game Treatment
X2 : Circuit Ladder Drill Treatment
X0 : Usual physical exercise activity
T2 : Posttest

RESULT AND DISCUSSION

In the description of the results of this study would discuss the average and standard deviation obtained from the test results performed on each group which was calculated based on the group and type of exercise applied.

In group I, there was an increase of mean value between pretest and posttest on the dependent variable (velocity and agility). This was evident that the average value of posttest was smaller than the pretest average value. It was clear that the mean value for the speed increase from the posttest measurement of 5.79 seconds seemed lower than the pretest measurement of 5.98 seconds, so it was clear that the difference from the average shows an improvement after 6 weeks of

Table 1. Result Experiment Data

NAME	SPEED			AGILITY		
	Pretest	Posttest	Selisih	Pretest	Posttest	Selisih
S N R	7.12	6.88	0.24	13.66	13.43	0.23
M H	5.61	5.46	0.15	12.87	12.52	0.35
I P P	5.51	5.37	0.14	13.46	13.25	0.21
R F F	6.49	6.28	0.21	14.41	14.07	0.34
M H S	5.68	5.49	0.19	13.06	12.79	0.27
R S A R	6.5	6.29	0.21	17.84	17.23	0.61
P A P S	5.53	5.29	0.24	13.48	13.27	0.21
B W P S	5.57	5.35	0.22	14.43	14.12	0.31
F N R M	6.11	5.93	0.18	13.62	13.4	0.22
N H P S	5.72	5.53	0.19	12.82	12.21	0.61
Total	59.84	57.87	1.97	139.65	136.29	3.36
Mean	5.98	5.79	0.20	13.97	13.63	0.34
Standard Deviation	0.55104	0.53585	0.03401	1.47050	1.40296	0.15342
Improvement		3.40%			2.47%	

Table 2. Experiment Result Data

NAME	SPEED			AGILITY		
	Pretest	Posttest	Selisih	Pretest	Posttest	Selisih
D P F	6.13	5.77	0.36	14.61	14.02	0.59
L H	5.52	5.23	0.29	13.26	12.41	0.85
D Y F	6.3	5.99	0.31	13.19	12.68	0.51
D A	5.92	5.58	0.34	13.66	13.19	0.47
P F R L	5.91	5.57	0.34	13.62	13.26	0.36
W M B	5.93	5.66	0.27	13.93	13.34	0.59
M A A	5.63	5.38	0.25	13.34	12.71	0.63
B J T K	6.3	5.94	0.36	13.08	12.43	0.65
F R P	6.52	6.2	0.32	14.17	13.67	0.5
M A R A	6.69	6.39	0.3	15.13	14.32	0.81
Total	60.85	57.71	3.14	137.99	132.03	5.96
Mean	6.09	5.77	0.31	13.80	13.20	0.60
Standard Deviation	0.37385	0.36186	0.03718	0.66870	0.65815	0.15005
Improvement		5.44%			4.51%	

training and 3 times a week

The data acquisition of agility variables that also showed an increase significantly after treatment of 6 weeks. The average for the agility increased from the mean in posttest measurement result of 13.63 seconds, looks lower than the mean in the pretest result of 13,97 seconds measurement. Based on the results above, it could be concluded that in the treatment of 6 weeks in group I, could improve the speed and agility. Here is the average result of group I described in the form of a diagram.

In the experimental of group II, there was an increase of mean value between pretest and posttest on velocity and agility dependent variable. This proved that the posttest mean value was greater than the pretest mean value. Where the mean value for the speed increase from posttest measurement was 5.77 seconds, and this looked lower than the pretest measurement result of 6.09 seconds. So the difference from the mean indicated improvement after 6 weeks with of 3 times of

training a week.

Based on the results mentioned above, it can be concluded that in providing a treatment in the experimental group II can improve the speed and agility. The data acquisition of agility variables also showed an increase in agility after being treated for 6 weeks. The mean value in increase of agility from posttest measurement result of 13.20 seconds looked lower than the result of a pretest measurement of 13.80 seconds. Based on the results mentioned above, it concluded that the treatment for experimental group II could improve the speed and agility.

To answer the proposed hypothesis, the analysis test used in this study was the mean difference test by using paired t-test. The value used in paired t-test was the mean value of each group (group I, group II, and group III), with the presentation of the result data of paired t-test as follows:

Table 3. Mean of Paired-Speed Sample Different Test Result

Speed		Mean	Sig. (2-tailed)	Result
Group 1	Pre-test Post-test	0.207	0.00	Significant
Group 2	Pre-test Post-test	0.272	0.00	Significant
Group 3	Pre-test Post-test	0.090	0.00	Significant

The result of paired t-test on Circuit game training training could be obtained by looking at Sig value. (2-tailed) 0.00, the H0 was rejected and Ha was accepted because of Sig 0.00 value < α value= 0,05. In other words there was a significant influence from the Circuit game training and Circuit Ladder Drill to the speed of the male students of grade V in SDN Kandangan III Surabaya.

The result of paired t-test on Circuit game training could be obtained by looking at Sig value. (2-tailed) 0.00. The H0 was rejected and Ha was accepted because of Sig value. 0.00 < α value= 0,05. In other words there was a significant influence from the Circuit game training and Circuit Ladder Drill on agility in the male students of grade V in SDN Kandangan III Surabaya.

According to the table above, there were different average results between groups in the results of different test calculations between groups using One Way Anova because the results showed the value of Sig. 0.00 < α value = 0.05 and Sig value 0.00 < α value = 0.05, so that H0 was rejected and Ha was accepted. In other words, there was significant difference between the exercise results of group I (Circuit game training) and group II (Circuit ladder drill) to increase speed and agility.

According to the table above, there were significant differences between the four groups. This could be known from the mean difference value. The Circuit ladder drill exercise was more optimal in giving increase of speed compared to the Circuit game training group, The statement was clarified by the mean plot velocity picture, which showed a more prominent increase in the Circuit ladder drill.

Table 4. Different Test Results of Different Sample Samples

Agility		Mean	Sig. (2-tailed)	Explanation
Group 1	*Pre-test* *Post-test*	0.262	0.00	Signifikan
Group 2	*Pre-test* *Post-test*	0.452	0.00	Signifikan
Group 3	*Pre-test* Post-test	0.083	0.00	Signifikan

Table 5. Different test Result Speed and Agility Inter Group

Variation Source	*df*	Speed		Agility		Result
		F count	*Sig.*	F count	*Sig.*	
Inter Group	2					
In Group	27	58.042	0.00	84.865	0.00	Significant
Total	29					

Table 6. *Post* H*oc Test* with LSD Result

Multiple Comparisons

LSD

Dependent Variable	(I) Training Method	(J) Training Method	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Speed Difference	Circuit Game Training	Circuit Ladder Drill	-.06500*	.01712	.001	-.1001	-.0299
		Control Group	.11700*	.01712	.000	.0819	.1521
	Circuit Ladder Drill	Circuit Game Training	.06500*	.01712	.001	.0299	.1001
		Control Group	.18200*	.01712	.000	.1469	.2171
	Control Group	Circuit Game Training	-.11700*	.01712	.000	-.1521	-.0819
		Circuit Ladder Drill	-.18200*	.01712	.000	-.2171	-.1469
Agility Difference	Circuit Game Training	Circuit Ladder Drill	-.22500*	.03108	.000	-.2888	-.1612
		Control Group	.17900*	.03108	.000	.1152	.2428
	Circuit Ladder Drill	Circuit Game Training	.22500*	.03108	.000	.1612	.2888
		Control Group	.40400*	.03108	.000	.3402	.4678
	Control Group	Circuit Game Training	-.17900*	.03108	.000	-.2428	-.1152
		Circuit Ladder Drill	-.40400*	.03108	.000	-.4678	-.3402

*. The mean difference is significant at the 0.05 level.

CONCLUSION

Based on the results of research and discussion described in the previous chapters, it could be drawn some conclusions research as follows: 1) There was a significant influence of circuit training program to increase agility and speed (speed) in grade V students of SDN Kandangan III Surabaya; 2) There was a significant influence of circuit ladder drill training program to increase agility and speed (speed) in grade V students of SDN Kandangan III Surabaya; 3) There was a difference of influence between circuit game training and circuit ladder drill training to improve agility and speed. The circuit ladder drill exercises had a better effect on the training than circuit game training and control groups on agility improvement*; 4)* There was a difference of influence between circuit game training and circuit ladder drill training to improve agility and speed. Circuit ladder drill exercises gave better impact than circuit game training and control group to increase the speed.

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