

Model of Treatment Media and Hand-Eye Coordination, Experimental Studies on Altras Softball Team

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Abstract

The objective of this research is to investigate the impact of training medias (using batting tee and hanging ball) and hand-eye coordination of hitting skill in softball. This research is conducted at Altras softball team. Using 2x2 factorial design. The analysis of variance between groups is at level of significance $\alpha = 0,05$. This research also aimed to find out the link between training medias and hand-eye coordination toward hitting skill on softball. Hand-eye coordination consists of high and low levels. This research was carried out in Altras softball team. The sample consists of 40 athletes who are divided into four group, each group consists of 10 athletes. The data analysis techniques use in this research were two-way analysis of variance (ANOVA) and further continued by Tukey test at $\alpha=0,05$ level of significance. The results of this research show that (1) in general, hitting success for group of athletes who training with the use of batting tee is better than the group of athlete who trained with the use of hanging ball, (2) there some link between

training media and hand-eye coordination toward hitting success on softball, (3) for high hand-eye coordination which uses batting tee training media is better than the which uses hanging ball training media (4) for low hand-eye coordination uses hanging ball is better than the which uses batting tee training at $\alpha=0,05$ level of significance

Keywords

training media, batting tee, hanging ball, hand-eye coordination, softball

1. Introduction

Playing softball can't be excused shortly however it has to be done by practicing and mastering the basic techniques (James 2012). Each sport has its own characteristics, the characteristics of softball games can be seen from the nature of the game, the motion techniques and rules of the games (Stevens et al 2009). Softball is a game that requires speed and accuracy, meaning that this game requires speed in running, speed, and accuracy in hitting and throwing a ball (Garman, 2011). In this research, the researcher used two different media but similar in characteristics. It was batting tee and hanging ball to know the influence of hitting success by using women as sample for in mastering the motoric skill in softball, the physic and psycho is related (Stevens et al 2009), (Garman, 2011), (Griwijoyo, 2012), (Sogiyanto, 2010), (Ricky Noren, 2009), and (Rod Cross, 2011). Generally, the meaning of media is something that can distribute the information from the source of information to the recipient or provider. According to *Association of Education and Communication Technology* (AECT) limit the meaning of media as all forms and channels used to distribute messages or information (Wahyu, 2007) and (Syaiful, 2006). In general, the media has functions such as (1) the aids to create effective training situations, (2) encourage students motivation, (3) provide a stimulus in education, and (4) promote harmonious training, and (5) give quick feedback (Sariman, 2007). In this research, the researcher used batting tee as media which according to the experts if we practice using batting tee "Can you hit line drive or a fly off a batting tee past the infield"^[1]. While hanging balls are modified by researcher to provide comparative treatment with the same characteristics. For supported variable, researchers used hand eye coordination which hand eye coordination is an activity that requires precision of views and movement control (James, 2012) and (Sutopo, 2006).

2. Research Methods

In accordance with the problems that was formulated and the objectives that was achieved, the research method used in this research was the Experimental Method with 2x2 factorial design.

Table 1. Design Treatment by Level 2x2

Media (A) Hand eye coordination (B)	Batting Tee (A ₁)	Hanging Ball (A ₂)
High (B ₁)	A ₁ B ₁	A ₂ B ₁
Low (B ₂)	A ₁ B ₂	A ₂ B ₂
Total	A ₁	A ₂

The variables involved in this study consisted of (1) independent variables, (2) dependent variables, and (3) attribute variables, described as follows: (1) the dependent variable was the success of hitting, (2) the independent variable was the training media, and (3) attribute variable was hand eye coordination. The implementation of this research was taking one meso-cycle, in which the research lasted for 16 times and training was conducted 3 times a week (Lubis, 2013). From the 156 of population, 150 of them were chosen to be sample members. Furthermore, from 150 people, the sample was chosen randomly to determine 75 people who are in batting tee media and 75 other people were included in the hanging ball media. To determine the category of height and low hand eye coordination on each media, a test was conducted to the members. Test result from each member were arranged based on the highest score to the lowest score using the Verducci technique (Verducci, 1980). The percentage technique was 27% for the high standard which was represented by the highest score and 27% for the lowest score. Thus, the number of each sample was 20 people consisting of 10 highest score (27% of 75) and 10 of the lowest scores (27% of 75). While sample members who were not in two categories wouldn't be involved so that the total number of samples involved in this study were 40 people in four treatments. The instrument used in data collection consist of two types of test, namely: (1) Beat skill test process which is seen from the initial motion, the implementation stage, and the final motion/continued movement using, (2) The skill test of hit result (Fauzi, 2019) and (3) Hand eye coordination test (Widiastuti, 2011). To test the

hypothesis was by using two-way Anava. The table were referred to determine the reliability of the results use the product moment formula. Whereas for test validity researchers use expert judgment form.

Table 2. Reliability Test (Arikunto, 2006)

Reliability	Indicators	Criteria
Skill test process	0,57	Medium
Skill test of hit result	0,88	High
Hand eye coordination test	0,59	Medium

3. Result and Discussion

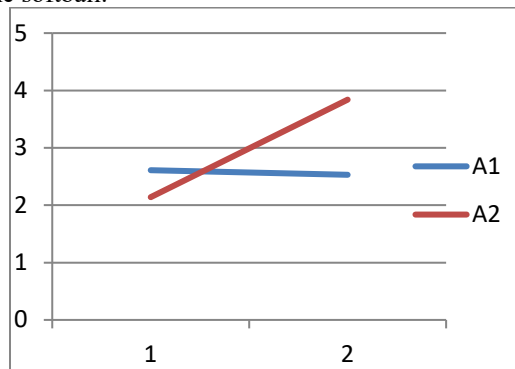
Both of these training media had the same goal, they were increasing the success of hitting softball balls where hand eye coordination was very supportive to get the success of hitting in a good softball playing, but each of the training media had a difference in terms of implementation.

3.1 The application of exercises using hanging ball media (A2) is better than training using batting tee media (A1)

The results of the motion analysis above were reinforced by the results of the calculation of variance analysis about the difference in effectiveness between the two training methods as a whole, F observation between columns (F_h) = 48,140, was greater than F table (F_t) which was 4,113 by focusing on success softball used tee ($\bar{x} = 2,83$ dan $s = 5,79$) comparing to the result of hitting the softball by using hanging ball media ($\bar{x} = 2,02$ dan $s = 3,98$). It can be concluded that overall the medium of training with batting tee media is better than the medium of hanging ball training on the results of hitting softball balls.

3.2 There is interaction between the media training with hand eye coordination on the results of the skill of hitting the softball balls

Based on the results of the two-way variance analysis, the interaction between the training media using the batting tee and the exercise using hanging ball media on the success of hitting the softball was shown in the anava calculation table above. Score calculated F_o interaction (F_{AB})= 56,333 and F table (F_t)= 4,11. It was shown that $F_{count} > F_{table}$ so, H_0 was rejected and H_1 was accepted. Thus it can be concluded that there was an interaction between the training media on the success of hitting the softball.



Picture 1: Interaction between training media and hand eye coordination

Source : result of processing data through 2x2 anava

Thus it can be concluded that for athletes who have high hand eye coordination if they want to improve their softball skills, they should be trained using the opposite media batting tee training for athletes who have low hand eye coordination if they want to improve their softball skills.

3.3 For athletes who have high hand eye coordination. The result of the skill of hitting softball balls through the application of media batting tee (A1) is better than the medium for hanging ball training (A2)

The method of the batting tee and hanging balls training made a significant difference to the success of hitting softball for groups that had high hand eye coordination. This was proven by the results of further tests using the Tukey test. The group that had high hand eye coordination with tee batting training media (P1) compared to the group that had high hand eye coordination using hanging ball training media (P2) obtained $Q_h = 0,567$ and $Q_t = 4,330$. Thus $Q_h > Q_t$ so that H_0 was rejected. The conclusion for athletes who have high hand eye coordination success is hitting softball by practicing using batting tee media ($\bar{x} = 2,61$ dan $s = 3,80$) better than practice using media hanging ball exercises ($\bar{x} = 2,53$ dan $s = 3,84$). It can be concluded that exercise using media batting tee is better than practice using hanging ball media for hand eye coordination groups.

3.4 For athletes who have low hand eye coordination, the results of the skill of hitting softball balls through the application of hanging ball media (A2) are better than the batting tee exercise media (A1)

Training media using batting tee and hanging ball training media made a difference to the success of hitting softball for groups that had low hand eye coordination. This was proven by the results of further tests using the Tukey test. The group that had low hand eye coordination with tee batting training media (P3) compared to the group that had low hand eye coordination using hanging ball training media (P4) obtained $Q_h = 14,444$ and $Q_t = 4,330$. Thus $Q_h > Q_t$ so that H_0 was rejected. The conclusion for athletes who have low hand eye coordination is success hitting the softball by practicing using hanging ball media ($\bar{x} = 3,84$ dan $s = 6,05$) better than practicing using media batting tee exercises ($\bar{x} = 2,14$ dan $s = 3,31$).

It can be concluded that the low hand eye coordination group is better trained by training using a hanging ball media compared to training using a batting tee media.

To test hypotheses one and two, the researcher used two-way variant analysis (ANAVA) technique. The complete calculation of ANAVA can be seen in appendix 21. Summarize in table 1 below.

Table 3. A summary of the results of the Anava calculation of the success of hitting the softball at the level $\alpha = 0,05$.

Source of the Variance	JK	Db	RK=JK/db	F h=RK/RDK	F tab	Information
Between A	1,628	1	1,628	11,671	4,113	Rejected
Between B	6,716	1	6,716	48,140	4,113	-
Interaction	7,859	1	7,859	56,333	4,113	Rejected
In	5,022	36	0,140			
Total	21,225	39	1,628			

4. Conclusion

Based on the results of data processing and the results of data analysis that was done the researchers concluded (1) the success of hitting softball for groups of athletes trained using the tee batting media was better than the group of athletes who were trained by using hanging ball media, (2) there was an interaction between the use of exercise media and hand eye coordination on the success of hitting the softball, (3) for athletes who had high hand eye coordination, the success of hitting by using batting tee media was better than training using hanging ball media, and for athletes who had low hand eye coordination, the success of hitting softball by using a hanging ball media was better than training using a batting tee media.

References

- Arikunto, Suharsimi. *Prosedur Penelitian Suatu Pendekatan Praktik*. PT Rineka Cipta, Jakarta: 2006
- B. D. Syaiful dan Zain Aswan. *Strategi Belajar Mengajar*. Rineka Cipta, Jakarta: 2006
- Fauzi, Dikdik Darmawaningrat. *Memukul Menggunakan Back Swing dan Tanpa Back Swing Terhadap Hasil Pukulan Dalam Olahraga Permainan Softball Pemain Putra UKM Baseball/Softball UPI Bandung*. Skripsi UPI, Bandung: 2009
- Garman, Judi dan Michelle Gromacki. *Softball Skills and Drills Second Edition*. Human Kinetics, USA: 2011
- Griwijoyo, Santoso dan Dikdik Zafar Sidik. *Ilmu Faal Olahraga (Fisiologi Olahraga)*. PT. Remaja Rosdakarya, Bandung: 2012
- K Soegiyanto, S. *Pengembangan Alat Ukur Keterampilan Dasar Bermain Softball*. Jurnal Cakrawala Pendidikan, FIK Universitas Negeri Semarang, Semarang: 2010
- Lubis, Johansyah. *Panduan Praktis Penyusunan Program Latihan*. PT Raja Grafindo Persada. Jakarta: 2013
- Ricky Noren. *Softball Fundamentals*. Pacific Lutheran University: 2005
- Rod Cross. *Physic of Baseball and Softball*. Rod Cross School of Physics University of Sydney. New South Wales Australia: 2011
- Sariman, Arif, dkk. *Media Pendidikan: Pengertian, Pengembangan dan Pemanfaatannya*. PT. Raja Grafindo Persada, Jakarta: 2007
- Sutopo, Arie dan Permana, Alma. *Buku Penuntun Praktikum Ilmu Faal Kerja (Ergofisiologi)*. Edisi II, Jakarta: 2006

- Stevens, Mona dan Kirk Walker. *Coaching Softball Technical and Tactical Skills*. American Sport Education Program, USA: 2009
- Tangkudung, James. *Kepelatihan Olahraga Pembinaan Prestasi Olahraga*. Penerbit Cerdas Jaya, Jakarta: 2012
- Verducci M, Frank. *Measurement Concepts In Physical Education*. Mosby Company, St. Louis Missouri: 1980
- Wahyu, Sri A. *Manajemen Sarana dan Prasarana Pendidikan*. CV Multi Karya Mulya, Jakarta: 2007
- Walker, Kirk. *The Softball Drill Book*. Human Kinetik.UK: 2007
- Widiastuti. *Tes dan Pengukuran Olahraga*. PT Bumi Timur Jaya, Jakarta: 2011

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