Head-Heavy and Head-Light Rackets on Forehand Groundstroke Result

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Keywords: Head-Heavy, Head-Light, Forehand Groundstroke.

Abstract: This research is motivated by the use of head-heavy and head-light racket on forehand groundstroke result that will get different result. The use of head-heavy racket will result in better accuracy compared to head-light racket. The objective of this research is to find out the effect of using head-heavy racket with forehand groundstroke on tennis, the influence of using head-light racket on forehand groundstroke on tennis, and to find out which racket is more influential on forehand groundstroke on tennis. The method used in this research is descriptive method with quantitative approach. The sampling technique in this research is purposive sampling with 8 tennis athletes from 25 members of UPI tennis club. The instrument used is The Hewiit Tennis Achievement Test. From the results of data processing and data analysis with homogeneity and normality test, the data are homogeneous and normal. Hypothesis calculation from equality significance test (one party) calculation results t-count 8,245 and t-table 1,761. Obtained t-count> t-table so that H0 is rejected. That is, the head-heavy racket is better than head-light. It was concluded that the head-heavy racket was more significant than the head-light racket against forehand groundstroke on tennis.

1 INTRODUCTION

For the achievement of optimal performance in the game of tennis can be achieved through the very important role of a coach. Therefore, the coach should be able to arrange the program, choose, and apply the training method in accordance with the purpose of the exercise itself.

Besides coach, parents and athletes themselves have equal roles and responsibilities in achievement. For optimal achievement in the tennis game, the basic factor that a tennis player needs to master is the equipment called racket.

Modern rackets have facilitated a change in playing style from one of technique to one characterised by power and spin. The combination of the increased stiffness of modern rackets and the tendency for tennis balls to have become harder has led to an increased shock transmission from the racket to the player, which is probably a major contributor to tennis elbow (Miller, 2006).

Biomechanical data on most bracing and protective equipment systems is lacking. To better understand the clinical success of counterforce bracing, a biome chanical analysis of braced and unbraced tennis players (serve and backhand strokes) was undertaken (Groppel and Nirschl, 1986).

The study shows that simple heuristics that rely on a few valid cues can lead to highly accurate forecasts. In many domains the decisions of experts are inferior to the decisions of statistical models of experts (Scheibehenne and Bröder, 2007).

The purpose of this study is to identify the age of peak performance in a broad range of athletic events incorporating multiple, diverse biological systems, learned skills, and motivation. Although many researchers have noted that the absolute levels of peak performance among super athletes have improved dramatically in the last 100 years, to date no one has answered the question of stability of peak performance age over this time period (Schulz and Curnow, 1988).

First thing to be considered is the weight, balance, great grip, the material and the installation of the strings. Two rackets that weigh the same but have different masses may have very different swing weights due to different mass distributions of each racket.

In this study, researchers have a basic assumption quoted in an article listed on the website, Claire Davis states that: “However, a racket with a

Abdilah, A., Satria, T., Guntara, P. and Fitri, M.
Head-Heavy and Head-Light Rackets on Forehand Groundstroke Result.
In *Proceedings of the 2nd International Conference on Sports Science, Health and Physical Education (ICSSHPE 2017) - Volume 2*, pages 400-403
ISBN: 978-989-758-317-9

bigger mass can be useful because of the effect the mass has on the speed of the outgoing ball."

From the above statement it can be concluded that "the head-heavy racket will be very useful because it has a mass effect on the impact of the ball, this can be proven by using the law of conservation of momentum. The heavier the mass of the racket, the harder it is to make a back swing but is very useful when forward swing and impact on the ball.

The objective to be achieved in this research is to know the difference between forehand groundstroke results between the use of head-heavy and head-light rackets.

Although cardiorespiratory variables were not different at submaximal intensities between the two tests, VO2max values derived from laboratory measurements were underestimated. Using field testing in addition to treadmill testing provides a better measurement of a player's individual fitness level and may be routinely used to accurately prescribe appropriate aerobic exercise training (Girard et al., 2006).

The results showed that place inconsisteny is more important than action inconsistency in children's judgments of story adequacy, except when the action involves the story theme. Developmental differences in story judgments generally were larger for inconsistent actions than for inconsistent places, perhaps due to children's problems in abstracting an action theme early in story processing (McPherson and Thomas, 1989).

Theoretical and methodological aspects of self-efficacy theory are assessed in this study, and the tennis performance of 40 active players (M age= 26.6 years) serves as the criterion variable. On a theoretical level, only self-efficacy beliefs, and not response-outcome expectations or the valence thereof, were consistently and significantly related to 12 dimensions of tennis performance (Barling and Abel, 1983).

Competitive tennis play requires a combination of the major physiological variables; however, the specifics of these variables have yet to be determined appropriately. General strength and flexibility training have been suggested as being beneficial for performance and injury prevention, yet specific guidelines are lacking (Kovacs, 2006).

2 METHODS

The research was carried out in 2016 to 2017. In this study, the authors used descriptive method because they wanted to know the comparison of using head-heavy and head-light rackets on forehand groundstroke on tennis game because based on information and problems that have been collected by researchers is what happens at the moment. As described in Sudjana (2005): "Descriptive research is a study that attempts to describe a phenomenon, an incident occurring now. In other words, descriptive research takes issue or focuses on actual issues as they were at the time of the study.

The characteristics of descriptive method are: (1) Descriptive research tends to describe a phenomenon as it is by studying a phenomenon as it is by regularly reviewing it, using objectivity and done carefully; (2) Absence of any given or controlled treatment; (3) Absence of hypothesis test.

2.1 Research Location

In a study titled head-heavy and head-light rackets on forehand groundstroke results, the location of the research on the title was held at Universitas Pendidikan Indonesia (UPI), Faculty of Sport and Health Education (FPOK) on the students who participated in the indoor tennis courts held in UPI indoor tennis. The reason for choosing the location is making the research process more effective and efficient.

2.2 Population and Sample

2.2.1 Population

In a study conducted by a researcher, first need to determine the population as a source of data for research purposes.

Population is a group of subjects needed by researchers, i.e. groups where researchers want to generalize the findings of his research. As for the population in this study is a student of Universitas Pendidikan Indonesia (UPI) Bandung which follows the tennis club about 25 people.

From the total population, researchers took eight men aged 18-21 years with the ability to play tennis field that is considered homogeneous to serve as a sample of research. Researchers conducted research on Student Activity Units (UKM) tennis UPI Bandung because the researcher is an active member of UPI Bandung tennis since becoming a student until now, so that communication and with other members can run smoothly.

2.2.2 Sample

The sample is part of the population that is considered to represent the entire population in question. According to Sugiyono (2012): "the sample is part of the number and characteristics possessed by the population". In sampling not all populations are sampled because researchers use purposive sampling technique with nonprobability sampling method. According to Sugiyono (2012): "Nonprobability Sampling is a sampling technique that does not give equal opportunities / chances for each element or member of the population to be selected to be sampled". While purposive sampling according to Sugiyono (2012): "technique determination of samples with certain considerations".

In this research, the researcher took samples from the students of Universitas Pendidikan Indonesia (UPI) Bandung who participated in the field of Student Activity Unit (UKM) tennis about 8 members who have the ability to play tennis above the average and considered homogeneous from 25 members of population.

3 RESULTS AND DISCUSSION

Named distribution normality test with non-parametric approach, this is done if the sample group used in the research is assumed as small group. The results of the test data can be seen in table 1 below. Table 1.

Table 1: Distribution of Normality Test with Lilliefors Test Approach.

Group	Lo	L table	Conclusion
Head-heavy racket	0,1797	0,285	NORMAL
Head-light racket	0,1549	0,285	NORMAL

Based on table 1 above can be explained the value of L table = 0,258. While the value of Lo racket head-heavy = 1.1797. The test criterion is "reject the null hypothesis if Lo obtained from the data count is greater than L table (Ho> L table) and accept the hypothesis if Ho is smaller than L table (Ho <L table). In this case the hypothesis is accepted. Thus the data from both groups is normally distributed, so the hypothesis testing using parametric approach.

Table 2: Homogeneity Test Result with Two Variances Similarity Test Approach.

Group	F count	F table	Conclusion
Head-heavy and *Head-light* rackets	3,25	3,79	Homogenous

The table 2 above homogeneity test criterion is accept the hypothesis if F count is smaller than F table (F <Fα) and reject the hypothesis if F count is greater than F table (F> Fα). On the basis of the results of testing the similarity of two variances in table 4.3 above, it is known that F count = 3.25 is smaller than F table = 3.79 at dk = (7,7) with the real level = α = 0.05. Thus it can be concluded from the test results similarity two variances is both groups are homogeneous.

3.1 Hypothesis Test

After the data shows normal and homogeneous distributions, the next step is to perform the Significance Two-Tide Equality Test Results (Single Party) using the distribution table t. Test results from these data can be seen in table 3 below.

Table 3: Two-Tide Equality Test Results (Single Party).

Group	t count	t table	Conclusion
Head-heavy and *Head-light* rackets	8,245	1,761	Significant

Based on the calculation in table 4.4 obtained t count = 8.245 and t table = 1.761. Test criterion is reject Ho if t count equals from t table (t count = t table) at the real level = 0,05 with dk = 14. So the conclusion is there is significant influence from the use of the head-heavy racket of the result of forehand groundstroke.

4 CONCLUSIONS

Based on the results of data processing and data analysis of the research that has been done on the effect of the using head-heavy and head-light rackets on forehand groundstroke results in tennis, it can be taken conclusion as follows:

- The head-heavy racket gives a significant effect on the forehand groundstroke result;
- The head-light racket gives a less significant effect on forehand groundstroke results;
- There is a significant difference from head-heavy and head-light rackets on forehand groundstroke on tennis. Based on the data obtained in the study, the head-heavy racket provides significant results for forehand groundstroke on tennis.

While doing forehand groundstroke, tennis players generally use a racket that suits their needs. However, based on the results of research that has been carried out the head-heavy racket can produce

more accurate forehand groundstroke because the head-heavy racket has a larger mass distribution to the racket head.

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