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**The Influence Of Exercise Method, Cooperative Attitude, And Sex Types
On Volleyball Playing Skill
(An Experimental Study On Students Of State Vocational High School 4
Kendal)**

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Abstract

This research compares the technical with the tactical exercise method as treatment variable, cooperative attitude, and sex types as attributive variable on volleyball playing skill for students attending volleyball extracurricular. Thus, the purpose of this research is to figure out the influence of exercise method, cooperative attitude, and sex types on volleyball playing skill.

This experiment research is conducted with a factorial research design of 2x2x2. The research population is students of grade X and XI with a total of 122 respondents. After a sampling method is conducted, 40 students are selected. The samples consist of 20 male students and 20 female students. each group consists of 10 students with high cooperation and the other 10 students with low cooperation. This research is conducted at the volleyball field of State Vocational High School 4 Kendal. The research instruments are questionnaires on cooperative attitude, observation, exercise program, and skill testing in playing volleyball. This research employs a *Randomize Block Design Analysis* at a significance level of $\alpha = 0.05$. The hypothetical testing results show that: (1) Sig. = 0.006 is smaller than sig = 0.05. It means that there is a significant influence difference between the technical and the tactical exercise method on volleyball playing skill; (2) Sig. = 0.006 is smaller than sig = 0.05. It means that there is a significant difference between the high and the low cooperative attitude on volleyball playing skill; (3) Sig. = 0.001 is smaller than sig = 0.05. It means that there is an interaction between exercise method and cooperative attitude on volleyball playing skill; (4) Sig. = 0.001 is smaller than sig = 0.05. It means that there is a significant interaction between the exercise method and sex types on volleyball playing skill; (5) Sig. = 0.001 is smaller than sig = 0.05. It means that there is a significant interaction between cooperative attitude and sex types on volleyball playing skill; (6) Sig. = 0.002 is smaller than sig = 0.05. It means that there is a significant interaction between exercise method, cooperative attitude, and sex types to volleyball playing skill.

Suggestions: (1) the trainers are required to conduct cooperation measurements in finding the talented students, and those students with high cooperation should be then well guided. Meanwhile, students with low cooperation should not be guided to become competitive athletes; (2) students are always suggested to maintain their cooperation exercise and teamwork that eventually improve their volleyball playing skill.

Keywords: exercise method, cooperative attitude, sex types, volleyball playing skill.

Introduction

Nowadays, there are two known exercise methods in game learning called Technical Method and Tactical Method. which method should be taken is the teachers' or trainers' authority based on their understanding to achieve the optimum results.

Learning conducted at school does not distinguish sex types during the implementation of learning processes. Female students have same rights with the male students to obtain learning materials. Thus, teachers should pay attention to the skill differences between male and female students for their learning success by considering that physical, sports, and health education uses physical activities to achieve the goals. Based on above explanations, physical, sports, and health education learning, the teachers should pay attention on their teaching method as well as male and female students' differences when implementing learning processes that students are highly motivated to absorb learning based on the expected purposes. Based on above explanations, it is understood that to well implement volleyball exercise, accuracy is required by the trainers in using the exercise method. To develop players' creativity and moving skill learning processes may run very well, cooperation among players is conducted. To realize the moving skills of each student, the initial state of players' cooperative ability should be well recognized. Understanding on the players' initial state may provide an insight to well organize the program. With a good organizing program, it is expected that players' potential to achieve the volleyball playing minimum skill may be developed.

Research Objectives

The purpose of this research is to figure out the volleyball playing skill achievement results in detail by examining influence differences between technical and tactical exercise method; influence differences between high and low cooperative attitude; interaction between exercise method and cooperative attitude; interaction between exercise method and sex types, cooperative attitude and sex types; interaction between exercise method, cooperative attitude, and sex types to volleyball playing skill.

Research Methods

This research uses a *multivariate* research design with factorial 2x2x2. This *multivariate* design is conducted to figure out the influence of variables with various main factors and those with combination levels as well as the influence of interaction with various factors to the volleyball playing skill.

This research population is students of X and XI grades of State Vocational High School 4 Kendal in the Academic Year of 2010/2011 attending volleyball extracurricular activities with the total number of 122 respondents. Those consists of 71 male and 51 female students. The research samples are collected using a *purposive sampling* technique. Thus 40 students are selected to be the research samples consisting of 20 male and 20 female students classified into 4 groups of students.

Data collection technique and instruments used in this research are testings on the cooperative attitude and the volleyball playing skill.

Data obtained from volleyball playing skill results are then analyzed using a *Randomized Block Design* analysis for factorial experiment. The analytical results show that there is a major influence of independent variables on dependent variables as well as interaction between independent variables in their relationship with the dependent variables. Before analyzing the data, the required normality and homogeneity tests are conducted. The normality test uses *Liliefors* testing, while homogeneity test uses *Levene Testing*. The results are considered normal with $\text{Sig} > 0.05$ ($P > 0.05$), and $\text{Sig} > 0.05$ ($P > 0.05$) respectively for both testings conducted with significance level $\alpha = 0.05$.

Results and Discussions

Results

The data collected from the results of volleyball playing skill of each group based on the experimental treatment are used as the analytical materials. Based on the experiment designs of this research, there are eight groups requiring to be described separately. The score description of the eight-group volleyball playing skill results are as follows.

Table 1. Desain of playing skills

| EXERCISE METHOD | | TECHNICAL | | TACTICAL | |
|----------------------|---|--|--|---|--|
| COOPERATIVE ATTITUDE | | High | Low | High | Low |
| Sex types | M | A : 113.20 S : 00 D : 8.7863 N : 5 | A : 111.80 S : 00 D : 12.911 N : 245 | A : 112.000 SD : 12.3895 N : 1 5 | A : 114.600 S : 0 D : 10.2127 N : 4 5 |
| | F | A : 111.80 S : 007.79 D : 102 N : 5 | A : 113.00 S : 00 D : 10.606 N : 60 5 | A : 117.200 SD : 0 N : 8.81476 5 | A : 119.000 S : 0 D : 4.30116 N : 5 |

Description:

M = Male F = Female A = Average (Mean)
SD = Standard Deviation N = Sample Number

Based on the data above, the following is displayed concerning volleyball playing skill data in the shape of histogram.

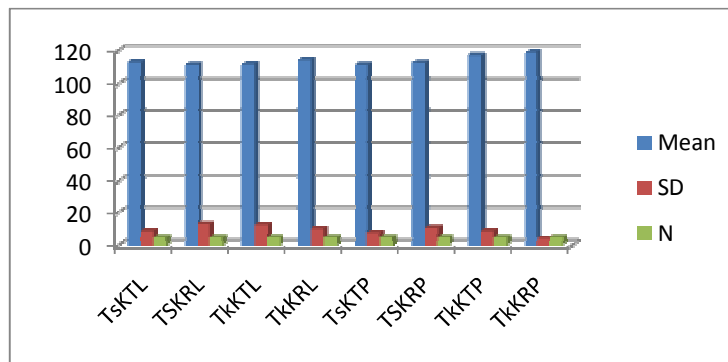


Fig 1. Histogram of Concerning volleyball playing skill

Description:

TsKTL : Technical Method, High Cooperative attitude, Male
 TsKRL : Technical Method, Low Cooperative attitude, Male
 TkKTL : Tactical Method, High Cooperative attitude, Male
 TkKRL : Tactical Method, Low Cooperative attitude, Male
 TsKTP : Technical Method, High Cooperative attitude, Female
 TsKRP : Technical Method, Low Cooperative attitude, Female
 TkKTP : Tactical Method, High Cooperative attitude, Female
 TkKRP : Tactical Method, Low Cooperative attitude, Female

In detail, data description presented in above table and histogram may be explained as follows:
 The volleyball playing skill testing results on technical exercise method group with high cooperative attitude of male students (TsKTL) based on the table show that $X = 113.2000$, $DS = 8.78635$, and $n = 5$. It means that of 5 students, there is 1 student with volleyball playing skill above the average while the other 4 students are under average.
 The volleyball playing skill testing results on technical exercise method group with low cooperative attitude of male students (TsKRL) based on the table above show that $X = 111.8000$, $DS = 2.91124$ and, $n = 5$. It means that of 5 students, there are 3 students with volleyball playing skill above the average while the other 2 students are under average.

The volleyball playing skill testing results on tactical exercise method group with high cooperative attitude of male students (TkKTL) based on the table above show that $X=112.000$, $DS= 2.38951$, and $n = 5$. It means that of 5 students, there are 4 students with volleyball playing skill above the average while 1 student is under average.

The volleyball playing skill testing results on tactical exercise method group with low cooperative attitude of male students (TkKRL) based on the table above show that $X=114.6000$, $DS=10.21274$, and $n = 5$. It means that of 5 students, there are 2 students with volleyball playing skill above the average and 3 students are under average.

The volleyball playing skill testing results on technical exercise method group, with high cooperative attitude of female students (TsKTP) based on the table above show that $X=111.8000$, $DS= 7.79102$ and $n = 5$. It means that of 5 students, there are 2 students with volleyball playing skill above the average and 3 students are under average.

The volleyball playing skill results on technical exercise method group with low cooperative attitude of female students (TsKRP) based on the table above, show that $X=113.0000$, $DS=10.60660$, and $n = 5$. It means that of 5 students, there are 2 students with volleyball playing skill above the average and 3 students are under average.

The volleyball playing skill results on tactical exercise method group with high cooperative attitude of female students (TkKTP) based on the table above show that $X = 117.2000$, $DS = 8.81476$, and $n = 5$. It means that of 5 students, there is 1 student with volleyball playing skill above the average and 4 students are under average.

The volleyball playing skill testing result on tactical exercise method group with low cooperative attitude of female students (TkKRP) based on the table above show that $X = 119.0000$, $DS = 4.30116$, and $n = 5$. It means that of 5 students, there are two students with volleyball playing skill above the average and 3 students are under average.

Normality Test

The normality test data are examined to figure out whether each group data are normally distributed or not. normality test data are then tested with *Liliefors* test (Sudjana : 2002). The result is normal if $Sig > 0.05$ ($P > 0.05$). For all testings are conducted with significance level $\alpha = 0.05$.

Table 2. The summary of normality testing results of each group

| Treatment Group | Kolmogorof – Smirnov ^a | | | Shapiro-Wilk | | | Con clusion |
|-------------------------------------|-----------------------------------|-----|-------|--------------|-----|-------|-------------|
| | Statistic | d f | Sig | Statistic | d f | Sig | |
| Males' High Technical Cooperation | 0.309 | 5 | 0.134 | 0.855 | 5 | 0.212 | Normal |
| Males' Low Technical Cooperation | 0.214 | 5 | 0.200 | 0.966 | 5 | 0.847 | Normal |
| Males' High Tactical cooperation | 0.314 | 5 | 0.120 | 0.753 | 5 | 0.032 | Normal |
| Males' Low Tactical Cooperation | 0.362 | 5 | 0.031 | 0.814 | 5 | 0.105 | Normal |
| Females' High Technical Cooperation | 0.370 | 5 | 0.130 | 0.888 | 5 | 0.346 | Normal |
| Females' Low Technical Cooperation | 0.300 | 5 | 0.161 | 0.910 | 5 | 0.470 | Normal |
| Females' High Tactical cooperation | 0.242 | 5 | 0.200 | 0.894 | 5 | 0.379 | Normal |
| Females' Low Tactical cooperation | 0.279 | 5 | 0.200 | 0.885 | 5 | 0.335 | Normal |

From the table above, it is found that technical exercise method, high cooperation, male with Sig value = $0.212 > 0.05$ ($P>0.05$) means normally distributed. Technical exercise method, low cooperation, male with Sig value = $0.847 > 0.05$ ($P>0.05$) means normally distributed. Tactical exercise method, high cooperation, male with Sig value = $0.32 > 0.05$ ($P>0.05$) means normally distributed. Tactical exercise method, low cooperation, male with Sig value = $0.105 > 0.05$ ($P>0.05$) means normally distributed. Technical exercise method, high cooperation, female with Sig value = $0.348 > 0.05$ ($P>0.05$) means normally distributed. Technical exercise method, low cooperation, female with Sig value = $0.470 > 0.05$ ($P>0.05$) means normally distributed.

Tactical exercise method, high cooperation, female with Sig value = 0.379 > 0.05 (P>0.05) means normally distributed. Tactical exercise method, low cooperation, female with Sig value = 0.335 > 0.05 (P>0.05) means normally distributed.

Homogeneity Test

The population homogeneity testing is conducted using *Levene Test* on data resulted from eight research groups which should comply with the assumption that its variant is homogeneous. The result is normal if Sig > 0.05 (P>0.05). All testings are conducted with significance level of $\alpha = 0.05$ (Sudjana, 2002).

Table 3. The homogeneity testing results are presented in the following table:

| Group | Innitial Skill | Final Skill | Conclusion |
|---|----------------|-------------|------------|
| Technical and Tactical Method Homogeneity | 0.571 | 0.301 | Homogenous |
| High and Low Cooperative Attitude Homogeneity | 0.746 | 0.286 | Homogenous |
| Male and Female Homogeneity | 0.992 | 0.874 | Homogenous |

From the table above, based on *Levene Test*, it is found that the Sig value = 0.286 > 0.05 (P>0.05). It means that sample is homogeneous.

Based on the calculation results of normality and homogeneity test analytical requirement above conclude that the required analysis for variants is completed that further analysis is conducted with parametric statistics.

Validity Test

The correlated variables are the answers of each item correlated with the total score obtained by each respondent. In addition, value of r_{xy} obtained by each item is consulted against the table value of *r product moment*. If $r_{xy} > r_{table}$ $\alpha = 5\%$, then measuring instrument is considered valid (Arikunto, 2002:146). After the measuring instrument is examined and then the data validity of each item is tested with SPSS version 15.00, $H_0: r$ (each item) < 0.312 means that the item is invalid, while $H_1: r$ (each item) ≥ 0.312 means the item is valid.

Based on the obtained results of the statistical calculation due to the correlation value, the score which value is more than r_{table} (0.312), then the item is considered valid. Reliability is the obtained result of a relative or constant test when used at the other chances. Reliability testing may be based on the *output of Cronbach's alpha* value, in which the reliability test is determined by the table value of *Product Moment Correlation* with the degree of freedom $n-1$ (n =number of trial participants). The item is considered reliable, if $H_0: \alpha < 0.312$ which means that the item is unreliable, while $H_1: \alpha \geq 0.312$ means that the item is reliable.

Based on the obtained data from this research as presented on enclosure 6 page 113, it shows the resulted value of α which is more than r_{table} (0.312), then the instrument is considered reliable that the instrument may be used as the research instrument.

Hypothetical Test

This research is conducted based on the schedule prepared while data are obtained from the observation results on students, including their cooperative attitude. Cooperative attitude is accurately observed by paying attention to students' attitude on material, exercise process, norm trainer and exercise materials. Data are also obtained from volleyball playing skill by observing students on performance, volleyball playing, basic technique, and sportivity aspect. Variant analytical calculation is conducted in the research hypthocal testing using SPSS version 19 that the results are obtained as follows:

Table 4. Analytical Result Recapitulation of a *Randomized Block Design Post Hoc Testing Treatment*

| (I) TREATMENT | (J) TREATMENT | Mean Difference (I-J) | Std Error | Sig | 95% Confidence Interval | |
|---------------|---------------|-----------------------|-----------|-------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| Treatment 1 | Treatment 2 | 2.5333 | 2.21755 | 0.001 | -3.2485 | 8.3152 |
| | Treatment 3 | -1.6667 | 2.21755 | 0.009 | -7.4485 | 4.1152 |
| | Treatment 4 | -4.2667 | 2.21755 | 0.002 | -10.0485 | 1.5152 |
| Treatment 2 | Treatment 1 | -2.5333 | 2.21755 | 0.007 | -8.3152 | 3.2485 |
| | Treatment 3 | -4.2000 | 2.21755 | 0.002 | -9.9819 | 1.5819 |
| | Treatment 4 | -6.8000 | 2.21755 | 0.001 | -12.5819 | -1.0181 |

| | | | | | | |
|-------------|-------------|---------|---------|-------|---------|---------|
| Treatment 3 | Treatment 1 | 1.6667 | 2.21755 | 0.009 | -4.1152 | 7.4485 |
| | Treatment 2 | 4.2000 | 2.21755 | 0.002 | -1.5819 | 9.9819 |
| | Treatment 4 | -2.6000 | 2.21755 | 0.006 | -8.3819 | 3.1819 |
| Treatment 4 | Treatment 1 | 4.2667 | 2.21755 | 0.002 | -1.5152 | 10.0485 |
| | Treatment 2 | 6.8000 | 2.21755 | 0.001 | 1.0181 | 12.5819 |
| | Treatment 3 | 2.6000 | 2.21755 | 0.006 | -3.1819 | 8.3819 |

Table 5. Analytical Result Recapitulation of a *Randomized Block Design Test Between-Subjects Effects*

| Source | Type III Sum of Squares | df | Mean Square | F | Sig |
|-----------------|-------------------------|-----|-------------|-----------|-------|
| Corrected Model | 3069.017 | 5 | 613.803 | 8.321 | 0 |
| Intercept | 1573688.033 | 1 | 1573688.033 | 21334.463 | 0 |
| Treatment | 735.300 | 3 | 245.100 | 3.323 | 0.002 |
| Block | 2333.717 | 2 | 1166.858 | 15.819 | 0 |
| Error | 8408.950 | 114 | 73.763 | | |
| Total | 1585166.000 | 120 | | | |
| Corrected Total | 11477.967 | 119 | | | |

The analytical results of *Randomized Block Design* conclude that:

From the analytical results of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant difference between technical and tactical exercise method on volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is a difference between technical and tactical exercise.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.006 is smaller than Sig = 0.05. It can be concluded that there is a significant difference between high and low cooperative attitude to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted and the null hypothesis (Nh) is rejected. It means that there is a different between high and low cooperation.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method and cooperative attitude to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method and cooperative attitude.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method and sex types.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between cooperative attitude and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between cooperative attitude and sex types.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.002 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method, cooperation, and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method, cooperation, and sex types.

There are 6 significant alternative hypotheses of this research, covering exercise method, cooperative attitude, and sex types to volleyball playing skill. It shows that in playing volleyball, cooperative attitude plays a quite important role. Thus, there is a significant increase of volleyball playing skill experienced by each group before and after treatments (pretest and posttest).

Discussions

The influence difference of technical and tactical exercise method on volleyball playing skill.

The analytical calculation results of *Randomized Block Design* show that the Sig value = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant different between technical and tactical exercise method on volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis is rejected. It means that there is a difference between the technical and the tactical exercise method.

Each technical and tactical exercise method provides strenghts and weaknesses. Exercise method is one important factor used to gain achievements. One of strenghts of technical exercise method is easier and more efficient (time saving). In the implementation, it is conducted using a technical learning systematic to the others after one technique is completely learned. The exercise method used in exercise is important to be acknowledged by each teacher or trainer that the expected process result may be instantly and correctly achieved. Technical exercise method is a good teaching method to build certain habits, a medium to obtain a dexterity, accuracy, opportunity, and skill (Syaiful Sagala, 2003:217). The weakness of technical exercise method is that students shoud have a basic skill and technique on a particular sport that they are interested in.

Meanwhile, the major advantage of tactical exercise method is on understanding the form and the nature of game that the players may gradually have better playing ability. Tactical exercise method is conducted by giving direction to make partial movements of overall exercises that after those steps are well acquired, then continued by the other part of exercise program. The weakness of this exercise method requires longer time and more difficult to do as students do not have to acquire technical ability on a sport that they are interested in.

Due to the strenghts and weknesses, both exercise methods are significantly different. The data description results before and after treatments (pre-test and post-test) show that all groups experience volleyball playing skill increase. The hypothetical acceptance stating that there is an influent difference between technical and tactical exercise method on volleyball playing skill shows that both methods may be equally used very well.

The influent differences of high and low cooperation to volleyball playing skill.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.007 is smaller than Sig = 0.05. It can be concluded that there is a significant different between high and low cooperation on volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is a difference between high and low cooperation.

Cooperation is an attitude that the students have and highly influences the teamed sport game. High and low cooperative attitude have a significant different. Basically, cooperation indicates two parties or more dinamically interacting to achieve similar purposes. There are three major elements attaching at the cooperative frame covering elements of two parties or more, interaction, and purposes. If one element is not included to one object under study, it maybe assumed that there is no cooperation in that object.

The element of two parties is always describing an association which influences each other that interaction to realize mutual purposes is important to do. If the relationship or interaction is not intended to fulfill each party's interest, then the intended relationship is not considered as a cooperation. Although an interaction has a dinamic characteristic, it does not always mean a cooperation. A cooperation intended to fulfill other parties' interest involved in interaction process is also not considered as a cooperation. Cooperation usually places the interacting parties at balance, appropriate, and harmonic positions. Thus, cooperation significantly influences volleyball playing skill.

Interaction between exercise method and cooperative attitude to volleyball playing skill.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method and cooperative attitude on volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method and cooperative attitude. There is an interaction between exercise method and cooperative attitude to volleyball playing skill. It shows that there is a direct relationship between cooperative attitude and volleyball playing skill in the exercise method. By using tactical and technical exercise method, the results of volleyball playing skill may be influenced.

4) Interaction between exercise method and sex types to volleyball playing skill.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method and sex types.

Interaction between cooperative attitude and sex types to volleyball playing skill.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.001 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between cooperative attitude and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between cooperative attitude and sex types. There is an interaction between cooperative attitude and sex types to volleyball playing skill. It shows that there is a direct relationship between sex types and volleyball playing skill in the cooperative attitude. By having cooperative attitude, the results of volleyball playing skill may be influenced.

interaction between exercise method, cooperation, and sex types to volleyball playing skill.

From the analytical result of *Randomized Block Design*, it is obtained that Sig = 0.000 is smaller than Sig = 0.05. It can be concluded that there is a significant interaction between exercise method, cooperation, and sex types to volleyball playing skill. Thus, the alternative hypothesis (Ah) is accepted while the null hypothesis (Nh) is rejected. It means that there is an interaction between exercise method, cooperation, and sex types.

An interaction takes place when there is a significant influential difference between exercise method, cooperative attitude, and sex types to volleyball playing skill which can be explained as follows:

There is an interaction between exercise method and cooperative attitude to volleyball playing skill. It shows that there is a direct relationship between cooperative attitude and volleyball playing skill in exercise method. By using tactical and technical exercise method, the results of volleyball playing skill may be influenced.

There is an interaction between exercise method and sex types to volleyball playing skill. It shows that there is a direct relationship between sex types and volleyball playing skill in technical and tactical exercise method. By using technical or tactical exercise method, the results of volleyball playing skill may be influenced.

There is an interaction between cooperation and sex types to volleyball playing skill. It shows that there is a direct relationship between sex types and volleyball playing skill in cooperation. High and low cooperations influence volleyball playing skill.

There is an interaction between exercise method, cooperative attitude, and sex types to volleyball playing skill. It shows that there is a direct relationship between volleyball playing skill and exercise method, cooperation, and sex types. Thus, Exercise method, cooperation, and sex types, may influence volleyball playing skill.

Conclusions and Suggestions

Conclusions

From the hypothetical testing results, it can be concluded as follows; (1) there is a difference of technical and tactical exercise method on volleyball playing skill; (2) there is a difference of high and low cooperative attitudes on volleyball playing skill; (3) there is an interaction of exercise method and cooperative attitude on volleyball playing skill; (4) there is an interaction of exercise method and sex types on volleyball playing skill; (5) there is an interaction of cooperative attitude and sex types on volleyball playing skill; (6) there is an interaction of exercise method, cooperative attitude, and sex types on volleyball playing skill.

Suggestions

Based on the conclusions above, some suggestions are given as follows; (1) volleyball trainers in selecting talented players should include cooperation element as one parameter to select the talented players; (2) Volleyball players are expected to do team cooperative exercise to improve their teamwork while trainers should include special cooperative exercise in their exercise programs as forms of core exercise; (3) researchers intended to continue or replicate this research should convince more regarding to the findings of the research results and develop further researches and are suggested to do tighter controls in all series of experiments. Controls on independent variables out of the investigated variables should be conducted in tighter and more accurate ways that threat of internal and external validities may maximally be avoided; (4) research should be conducted based on cooperative attitude, especially focusing on sport psychological domain.

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