PROCEEDING

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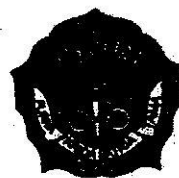# THE 3rd INTERNATIONAL SEMINAR ON SPORT AND PHYSICAL EDUCATION

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TABEL OF CONTENT

THE GENDER DIFFERENCE IN THE PARTICIPATION IN SPORT META-ANALYSIS

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ABSTRACT

This article presents a meta-analysis to research or perception of influence of difference gender to participation in sport, this Quantitative study review 9 studies from 7 articles. Result of study analysis in this handing out show, that the difference gender has a correlation to participation in sport.

Keywords: Gender, Partisipation, Sport.

Generally, the gender gap between men and women in the sport has increasingly reduced, however; there is still the participation differences in the sport activities. For example, boxing, football are still dominated by men. This is associated with the culture as well as the characteristics of the sport itself. (Komsten T A,2005). Traditionally, sports are intended for men. As a result, based on the gender view, sports are then classified into masculine, feminine and neutral. This categories affects one's choice in the sports (Koivula N, 1999). Sports are considered as male dominance, where the men pursue their masculinity identity. The men who refuse to take part in the sports may be considered as negative or the like. On the contrary, the women are considered inappropriate to take part in the sport, and as a consequence, they are viewed negatively when attending any sport. Bem (in Bowker A, 2003) proposed that individuals who own the masculine gender orientation avoid the participation in the so-called feminine sport and vice versa. Thus, it can be assumed that women refuse to take part in the masculine sports. According to Sabo (in Bowker A, 2003) women have the difficulty in reconciling between the competition essentials in the sport and femininity growth. Competitive sport leaves the strong impression about masculinity and feminity. Determining the gender orientation in the sport participation, Bem (in Koca C, 2005) classified respondents as masculine, feminine, Neutral, Androginous or *Undifferentiated.*

The Relevant Research

The research conducted by Komsten T A,(2004 & 2005) stated: (1) that men have the higher average scores compared to those of women in the strength performance, sport competence, sustainability, strength and masculinity. In contrast, women are better in *appearance good looking face, appearance slender,* and femininity; (2) The difference between men and women is not only viewed on their characteristics, but also their participation in sports. In fact, women involved in the masculine sport in Norway. The difference in feminine, masculine and neutral sports simply represents one of methods in the research. It is possible to do a direct survey on the men's and women's involvement in sports. (3) The vast majority of men (80,8%) involved in the men's activities and only few of them (17,7%) take part in the neutral sport, while only 1.5% involved in feminine sports. As for women, 60.5% of them choose the feminine sport, 11.6% choose neutral sport and the rest, 27.9 % involved in masculine activities; (4) The ideal type of men's body is described as muscled and strong. Of female respondents, 36% (n=126) stated such character, compared the male respondents, which was 49%(n=81). In contrast, women were associated with slim, fit, sexy, beautiful. Of female respondents, 67% (n=127) respondents mentioned such character as the ideal character (5) The men has the self-conception with the higher score about their body

generally. What is interesting is that men were scored higher for flexibility subscale, which is associated as feminine character. This can be understood because a large number of men involved in certain sport, such as dancing and gym. (6) The relation between the physical appearance and self-esteem was indicated strongly by the age and gender factor. This finding is significant to explain how the attraction values becomes the dominant factor or becomes the determinants for global esteem among the children and teenagers. This is also heavily influenced by the development of pop culture, such as television advertisement, film and magazine which also determine the self-perception and self-conception; (7) the research on the gender difference in the self-conception about the body also heavily depends on the reference framework used by each researcher. Some researchers even claimed that the gender difference really existed and occurred and some researchers stated that it was merely a bias. Thus, the future research should focus more on the qualitative research for evaluating the gender mechanism between men and women.

The research conducted by Christopher D, Lanz and Peter J, Schroeder, (1999) stated that (1) the individuals who were group in accordance with the sport participation posses the same masculinity and femininity confession as those who were grouped in accordance with their sport role, although they showed the different perception on masculinity and femininity; (3) the consistent relation between the participation in the competitive sport and the development of masculinity and femininity characteristics.

The result of Nathalie Koivula's research, (1995) indicated that: (1) participation motive in doing sport was closely related with gender and gender-based information process; (2) there was difference in drives to take part in sport, namely, the time for participation and the importance of the drive and participation in the difference in accordance with gender typing. Men and women underwent the different socialization since they were born. It then determines the difference in sport experience. This differences determine the participation drives, which in the end it determines the difference in sport activities.

The research of John Hammermeister and Damon Burton (2004) showed that (1) there was no gender difference in the level of anxiety in the competitive game, and there was no gender difference in the threat perception. This is so because both men and women face the same level of anxiety and challenge and both were required to deal with it in the competition: (2) the gender difference is clearly shown in the secondary appraisal process. For example, although men and women faced the same level of threat, women tended to have less control on the threat in their environment than men; (3) the result was also associated with the research on the socialization, which claimed that the stereotyped gender role and expectation role for men and women tent to be different in solving the pressure. Women were socialized to focused on emotion focused strategies, particularly on the social emotional support. While men were socialized to use problem-focused strategies.

SUMMARY

METHOD
LITERATURE REVIEW

The articles related with meta-analysis studies were found through journal data searching program in computer, that is EBSCO and website, EBSCO which was used that is www.ugm.lib.ac.id; and www.UnitedStatesSport.; www.thesportjournal.org. the websites were www.infotrac-college.com; www.google.com and www.findarticles.com.

The keywords used were *Gender, Sport* and *Sport participation*. The articles were analyzed in accordance with inclusion criteria as the requirement for meta-analysis study.
Criteria
There were several articles which fulfilled the requirements of meta-analysis. **Firstly,** primary study represents the research in which one can review any gender differences in the participation in sport. **Secondly,** the research

report in the primary study contained the information statistics required in quantitative analysis such as F, t or r. Thirdly, the concept description of gender difference and participation in sports possesses the concept similarity and homogen characteristics.

The Summary of Meta-Analysis Procedure

According to Hunter – Schmidt (1990) data analysis in doing meta-analysis should fulfil the standarized phases.

Firstly, Changes the algebra equation and F value is changed into t, d and r.

Secondly, Bare Bones' meta-analysis for sample error correction This can be done in the following steps: (1) calculating the mean correlation of population; (2) calculating rxy variance (s^2r); (3) Calculating the sampling error variance (^2e); (4) Calculating the impact of sampling error.

Thirdly, artefacts other than sampling error, that is measurement error, this is conducted by way of (1) calculating the combined means; (2) calculating the correlation of measurement error on x and y, that is the real correlation of the population; (3) Calculating the coefficient of variance square (V); (4) Finding the variance which refers to the artefact; (5) finding the real correlation; (6) Finding the interval of confidence and (7) finding the impact of reliability variation.

DATA ANALYSIS

1. The characteristics of research sample

The research sample analyzed in the meta-analysis sample has the characteristic as indicated in Table 1

TABLE 1
CHARACTERISTICS OF RESEARCH SAMPLE

Year	Researcher	Study	Number (N)	Characteristics
2003	Anne Bowker	1	100	Students
2005	Canan Koca	1	841	Athlete & non athlete
2004	Anne Torhild Klomsten	1	1198	Student
2004	Anne Torhild Klomsten	2	1198	Student
1999	Christoper D Lantz	1	409	Students
1999	Christoper D Lantz	2	409	Student
1999	Nathalie Koivula	1	440	College student
2004	Weidong Li, Jr, Louis Harrison, Melindo Solmon	1	238	College student
2005	Lisa A Harrison	1	148	College student
2003	Anne Bowker	1	100	Student
2005	Canan Koca	1	841	Athlete & non athlete
2004	Anne Torhild Klomsten	1	1198	Student
	Total Average		4,981 423,924	
	SD		553,444	

2. Transformation of F value to t, d and r

There were 9 survey studies, of which 4 studies resulted in F value, 2 studies resulted in t value and 3 studies resulted r value. It is necessary to transfer the values to t, d and r. The algebra formula used was

$$t = \sqrt{F}$$

$$d = \frac{2t}{\sqrt{N}}$$

$$d = \frac{2d}{\sqrt{(1-r^2)}}$$

$$r = \frac{d}{\sqrt{(4 + d^2)}}$$

Value r_{xy} obtained from the study and the transformation of F value is shown in Table 2

TABLE 2
TRANSFORMATION OF F VALUE TO t, d AND r

No	Year	Researcher	N	F	t	d	r_{xy}
1	2003	Anne Bowker	100	2,990	1,729		0,200
2	2005	Canan Koca	841	4,280	2,069		0,071
3	2004	Anne Torhild Klomsten	1198	1,880	8,000		0,225
4	2004	Anne Torhild Klomsten	1198	21,06	6,700		0,190
5	1999	Christoper D Lantz	409	41,370	6,432		0,370
6	1999	Christoper D Lantz	409	21,520	4,639		-0,200
7	1999	Nathalie Koivula	440	8,550	2,924		0,138
8	2004	Weidong Li, Jr, Louis Harrison, Melindo Solmon	238	4,360	2,088		0,135
9	2005	Lisa A Harrison	148	2,980	17,26		0,141
			4981	108,990	36,31		1,2713

3. The Correction on the sampling error (*Bare Bones Meta Analysis*)

a. The average of population correlation

According to Hunter (1990), if the population correlation is assumed constant among studies. Thus the best estimation of the correlation is not the simple average of the correlation of several studies. Instead, it is the average weighted for each correlation, that is, it is divided by the number of sample in the study. The best estimation for the population correlation was constructed in the following equation:

$$\bar{r} = \frac{\Sigma(N_i r_i)}{\Sigma N_i}$$

r_i as the correlation result of xy in studies i and N_i was the sample number in Study i. The next step is to transform the value of r_i of r_{xy} in each study to obtain the population correlation average, Table 3 shows the correlation of sampling error.

TABLE 3
POPULATON CORRELATION AVERAGE

No, Studi	N	r_{xy} or r_i	N X r_{xy}
1	100	0,200	20,000
2	841	0,071	59,915
3	1198	0,225	269,999
4	1198	0,190	237,858
5	409	0,370	151,330
6	409	-0,200	-81,800
7	440	0,138	60,884
8	238	0,135	32,055
9	148	0,141	20,932
Total	4981	1,2713	761,171
Rerata	553,444	0,1413	0,153

Thus, the average of population correlation with the sample number or r, that is 0,153 or 0,15.

b. Varians r_{xy} (atau $\sigma^2 r$)

The equation used to calculate the variance r_{xy} (or $\sigma^2 r$) is as follows:

$$\sigma^2 r = \frac{\sum [N_i (r_i - \bar{r})^2]}{\sum N_i}$$

The result of the calculation is shown in Table 3

Table 4, Variance r_{xy}

No, Study	N	r_{xy}	N $(r_{xy} - \bar{r})^2$
1.	100	0.200	0.223
2.	841	0.071	5.596
3.	1198	0.225	6.307
4.	1198	0.190	1. 674
5.	409	0.370	19. 292
6.	409	-0.200	50. 912
7.	440	0.138	0.092
8.	238	0.135	0.078
9.	148	0.141	0.019
Total	4981	1.2713	84.194
Average	553.444	0.1413	0.017
SD			0.130

Referring to the result, it is shown that variance r_{xy} = 0.017

c. Sampling Error Variance

Next, the researcher conducted correction on the observed $\sigma^2 r$ to estimate the variance in population correlation, given that the variance of 0.017 was really the combination of 2 tings, namely, the variation in population correlation and variation in sample correlation resulted from the sampling error (Hunter and Schmidt, 1990), The formula is as follows:

$$\sigma^2 e = \frac{(1-r)^2}{(\tilde{N}-1)}$$

The resulted analysis was $\sigma^2 e = 0002$. Thus, those 9 studies have the sampling error variance ($\sigma^2 e$) of 0.002.

d. The Estimation on the population correlation variance

Furthermore, the research estimated the real population correlation variance pf those 9 studies. It was conducted by substrating variance r_{xy} with sampling error variance . population correlation variance was counted with the formula :

$$\sigma^2 p = \sigma^2 r - \sigma^2 e$$

thus the estimation is : 0.017 – 0.002 = 0.015.

e. , Interval of confidence

Next, determining the lower and higher limit of corrected population correlaton because of the sampling, the researcher estimated

$\bar{r} \pm 1.96$ SD = 0.153 ±1.96 ($\sqrt{0,017}$) = 0.153±1.96 (0.130)
  = 0.153± 0.255552

The lower limit of corrected population estimation, based on the sampling error, was -0.089 while the upper limit of corrected population correlation, based on the sampling error, was 0. 394.

f. Error Contribution caused by Sampling Error

The estimation for identifying the error contribution caused by sampling error was conducted with the following formula:

$$\frac{\sigma^2 e}{\sigma^2 p} \times 100\% = \frac{0.002}{0.015} \times 100\% = 10.215\%$$

Based in the above result, it can be said that among the 12 studies, the error contribution caused by the sampling error was **10.512 %** and this means that the unidentified error was **89.785 %**.

2. Correction on Measurement Error

After correcting the sampling error, the researcher estimated the correction on the measurement error. The worksheet for the estimation is as follows

Table 4, several assessment in estimating the measurement error

No. Studi	N	r_{xy}	r_{xx}	r_{xy}	$\sqrt{r_{xx}}$	$\sqrt{r_{xy}}$	$N \times r_{xy}$
1	100	0.200	0.320	0.200	0.566	0.447	20.000
2	841	0.071	0.630	0.510	0.794	0.714	59.915
3	1198	0.225	0.570	0.530	0.755	0.728	269.999
4	1198	0.190	0.310	0530	0.557	0.728	237.858
5	409	0.370	0.930	0.870	0.964	0.933	151.330
6	409	-0.200	0.810	-	0.900	0.000	-81.800
7	440	0.138	0.540	-	-	0.000	60.884
8	238	0.135	-	0.620	-	0.787	32.055
9	148	0.141	0.800	0.400	-	0.632	20.932
Total	4981	1.2713	4.910	3.660	4.5355	4.9700	761.171
Mean	553.444	0.1413	0.6138	0.5229	0.7559	0.5522	84.5746
SD	423.924	0.1527	0.2266	02039	0.1682	0.3383	111.3537

a. **Combined Average:**

The combined average was calculated with the formula

$$\bar{A} = \text{average } \sqrt{r_{xx}} \times \sqrt{r_{xy}} = 0.7559 \times 0.5522 = 0.41740798$$

b. **Population Correlation after corrected by measurement error**

$$\rho = \text{Ave} (\rho_i) = \frac{\text{Ave } \bar{r} = 84.5746}{\bar{A} \quad 0.41740798} = 0.3661$$

where

Ave $\bar{r}$ = real average from correlation r_{xy}

$\bar{A}$ = combined average

It is indicated that the real population correlation after corrected by measurement error both in dependent variable and independent variable was 0.3661.

c. The number of variation square coefficient (V)

The number of variation square coefficient was calculated with the following formula:

$$\underline{V} = \frac{SD^2(a)}{Ave^2(a)} + \frac{SD^2(b)}{Ave^2(b)}$$

$$= \frac{(0.1682)^2}{(0.7559)^2} + \frac{(0.3383)^2}{(0.5522)^2} = \frac{0.02829124}{0.57138481} + \frac{0.11444689}{0.30492484}$$

$$V = 0.04951 + 0.375328 = 0.42479$$

d. Variance referred to artefact variation

The calculation of variant referred to artefact variation was calculated with the following formula : $\sigma^2_2 = \rho^2 \, A^2 V$

$= (0.3661)^2 \times (0.41740798)^2 \times (0.42479)^2 = (0.13402921) \times (0.174229) \times (0.1804465) = 0.00992.$

e. The real correlation variance

' The calculation of correlation variance was conducted using the following formula :

$$Var (\rho) = \frac{Var (\rho_{xy}) - \rho^2 \, \pounds^2 V}{A^2} = \frac{0.015 - 0.00992}{0.41740798} = 0.0301665$$

$$SD = \sqrt{0.0301665} = 0.173685$$

Thus, the real population correlation estimation (r) was 0.3661 and standard deviation (SD) was 0.173685.

f. Interval of Confidence

Assuming that the data distribution of measurement correlation was normal distribution, the calculation of interval of confidence was as follows;

$$\rho \pm 1.96 \, SD = 0.3661 \pm 1.96 \, (0.173685) = 0.3661 \pm 0.3404226$$

Thus the lower limit of population correlation after corrected based on the measurement error was **0.0256774** while the higher limit of population correlation estimated after corrected based on the measurement error was **0.7065226.**

g. The Error Contribution cased by Measurement Error

The estimation for identifying the error contribution caused by sampling error was based on the following formula:

$$\frac{\rho^2 \, A^2 V}{\sigma^2 (\rho_{xy})} \times 100\% = \frac{0.00992}{0.015} = 58.686775 \, \%$$

Based on the above score, it can be said that, among the 9 primary studies, the error contribution caused by the measurement error was **58.686775 %** and this means that the unspecified error factor was **31.098541 %.**

Result Interpretation

a. Sampling error

Value variance caused by the sampling error was **0.002** while the population variance was 0.015. Thus, when compared with the population variance, variance percentage caused by sampling error was relatively small, that is 10,215 %. This means that the bias possibility cased by the sampling was relatively small.

b. Measurement error

Variance valued caused by measurement error was 0.00992 both in the independent variable (Gender Difference) and dependent variable (Participation in sports), while the variance value of the population was 0,015. when comparing the variance of measurement error and population variance, one found that the impact of measurement error variance was relatively small that is **58.686775**. The percentage was small and even smaller than variance percentage caused by sampling

DISCUSSION

The gender difference is a theoretical and social categories, alike race, social class, age, ethnicity etc in the social analysis as well as in sports. According to Theberge (in Koca C, 2005) the emphasis on the physical and bodily element in the sport made it related with the ideological construction, about gender, so that men superiority in the sport was strengthened. Bryson (in Koca C, 2005) stated that there were two matters which created the masculine hegemony in sport; namely; firstly, sport was closely related with the male dimension, that is, the tangible physical skills; secondly, sport related the male with the used of strength and violence. On the other side, in the social life, gender difference determined the acceptability of social activity and social role for men and women. Thus, it directly determine the level of participation for men and women in sports. Through meta-analysis study, it was found that correlation was found between gender difference experienced by individuals in the sport participation.

CONCLUSION

Based on the available primary data, the correction on the research artefacts can only be conducted on those which were cased by sampling and measurement error. After correcting on both artefacts, there was still **89.785 %**, unexplained population variance. The extent of the variance (above 75%) signified the existence of moderator variable (Hunter and Schmidt, 1990).

Population correlation after being corrected based on both artefacts was 0.3661 with the population variance of 0.0301665 (SD of 0.173685). In the significance level of 95%, the confidence interval of population correlation was 0.140265 < p < 0.64886. Based on the results, it can be concluded that the correlation between gender difference variable and participation in the sports was 0.3661 (in the confidence interval of 95% was 0.140265 < p < 0.64886). This indicated that both correlated positively. The assumption on the moderator variable which mediated the correlation was seemingly hard to find since the lack of data from primary data.

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Establishment of learning the basic subjects of motion handball through sport education model is expected to give a clear picture of the context of conventional learning that emphasizes the mastery of mere exercise techniques oriented toward learning in athletic competition so that educate students to be players, coaches, referees, managers, statistician, trainer, or other components. Student involvement can be measured directly where the program is determined solely by student learning.

The results of research and development in the form of a sport education products subject handball motion base has advantages include: 1) to educate students to become players in the real meaning and help them grow to become competent sportsman, wise and knowledgeable, and enthusiastic, 2) model of sport education has goals that are immediate and comprehensive, which should be attainable by students through their active participation, and 3) facilitate hand ball lecturer in optimizing learning, especially through sport education model.

The shortage of products include: 1) each student can only play a role only in systems of competition and not bia alternated roles before the season (one semester), completed, and 2) require adequate infrastructure facilities such as tennis , balls, and other equipment.

CONCLUSIONS AND SUGGESTIONS
Conclusions
The final product of a sport education foundation course hand ball movement as a whole can be tested to obtain maximum results. Sport education model can bridge the students and lecturers in the learning-oriented show on the involvement of students into the real perpetrators of sportsmen.
Suggestions
1. The existence of trial implementation of the first study to obtain maximum results.
2. The existence of dissemination of research to prove the effectiveness of sport education model that has been made.

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