

Developing Android-based Application of Handball Match Statistics for the Coaches in East Kalimantan

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Abstract

One of the support branches of the handball sport can be developed with using easy technology which is simple and cheap. The objective of this study is to develop and analyze the product of the android-based application of handball match statistics, the acceptability and effectiveness of the android-based application of handball match statistics on the coach's evaluation. The research procedure included several steps: identification of potential and problems; data collection; product design; expert validation; revision; small-scale trial; product revision; large-scale trial; product revision. The instruments used in this study were evaluation sheet/questionnaire, and suggestion. The validation results of materials experts I and II were obtained from the materials and content quality by the percentage of 75% in step I and 88% in step II from the materials expert I, and by percentage of 81% in the step I and 90% in the step II from the materials expert II. In a small-scale trial, the score obtained from the coach was in a very good category with the average percentage of 83%. The results of large-scale product trial obtained a score in the very good category with the average percentage of 88%. The results of product trial obtained the average percentage of 88% in the very good category. The conclusion of this study develops an android-based application product of handball match statistics. The suggestion is this application can be used by coaches during a match to evaluate the match quickly.

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INTRODUCTION

Handball is a sport which is played using simple movement and passing skills as well as the ability of an athlete's body to move. With this condition, an athlete must exert his ability. Handball is not only affected by physical fitness. His mind generates any physical activity done by the athlete. Therefore, playing handball will develop the elements of thinking power, will, and feeling (Prasojo, Pramono, and Nurharsono, 2012).

An athlete should quickly and relevantly observe, defend, predict, conclude, and act. Sports performance depends on a combination of physical, functional, and behavioral characteristics and sport-specific skills (Coelho, Moreira, Gonçalves, Figueiredo, Elferink-Gemser, Philippaerts, and Malina, 2010). In the teaching-learning process of handball, each player learns good basic techniques. A player who has good basic techniques tend to play handball well (Hermansah, 2018). The mastery of a motoric skill is a process when a person develops a set of responses to the movement pattern, which is coordinated, organized, and integrated (Sulaiman, 2014).

Support for the development of handball as a branch of sports is using easy, simple, and affordable technology. On the other hand, there are numerous issues of handball, one of which is how the coach should play a role that does not distract his concentration and provides a quick evaluation during the match. This is important because, during the match, the coach should monitor the play as well as analyzing the match statistics of the players. According to Suriasumantri (2007) human has a language that enables him to communicate information and way of thinking behind the information. The evaluation process should be conducted comprehensively, so the result can be used as a consideration in determining the quality of a program (Winata, Rahayu, and Pramono, 2015). In general, the evaluation process cannot be separated from the data behind the process.

The development of technology in this millennial era has affected all aspects of life, the

fast and wide range of internet network contributes to the smartphone advance which can be used by all classes of society without limited ages (Yunus, 2017). The development of technology has changed the ways people learn (Ngandhika, Rustiana, and Pramono, 2018). The emergence of technology on the match statistics enables a coach to quickly evaluate during the halftime between the first and second halves, so it can make a coach more effective and efficient in playing his role as evaluator

The researcher in this present study collected some information related to the coaches' needs during a match by using a simple technology of handball match statistics. This one-hand application offers easiness in looking for the required information (Muyaroah, and Fajartia, 2017)

In East Kalimantan, particularly in Samarinda, there are a few numbers of handball clubs. From the school clubs to regional clubs. Indoor handball (consisting of 7 players) has rapidly developed and becoming more popular because the game is really interesting. The game is fast and dynamic with spectacular tactics and techniques of the players, the aim of throwing the ball is shooting, which is fast, strong, and accurate.

In the 2018 6th Porprov Kaltim in East Kutai, for the handball sports, the researcher revealed that the coach still used a match statistics made by the coach, so it was less effective and efficient during the match considering that the coach's focus is distracted between filling the match statistics or monitoring how the match is going. From this condition, it can be assumed that match statistics is a factor supporting the success in a match.

Coach is an indicator of athletes' success in reaching goals (Rohman, 2017). In the handball game, a coach is required to manage all equipment or training program to do. The achievement of an athlete or a team will be reached only if the coach masters the coaching specialty (Rahmat, and Irfandi, 2018). A coach, in this case, is demanded to understand all details in the sports branch that he teaches. A coach is the one who is responsible for the teams' action

in the field (Abdurrochim, 2016). In other words, the observation conducted by the researcher is a consideration for what is needed by coaches currently. What they need is not only instrument needs in the physical training, but also the simple evaluation of match statistics. Evaluation is a process, not a result (product). The result obtained from an evaluation activity is a quality of something, both related to values or meanings (Yuniartik, Hidayah, and Nasuka, 2017).

It would be better if the manual match statistics created by the coach is developed into a more practical form for the current sports, which integrates technology in the match and can also be used by the coach's team that help the coach to create the match statistics. The statistics contain data, of which the coach can draw a conclusion and decision. In turn, this type of statistics will provide a great opportunity as well as supporting the athletes' potentials in the golden age (Hartono, 2011). A drawback of result-oriented measurement and evaluation is it ignores the observation and measurement of the process accuracy in presenting the good and right movement technique (Soegiyanto, 2010).

The objective of this study is to develop and analyze the product of the android-based application of handball match statistics, and the acceptability and effectiveness of the android-based application of handball match statistics on the coach's evaluation. This study is focused on developing an android-based application of handball match statistics that can be used by handball coaches.

METHODS

This study was research and development of an android-based application of handball match statistics. The research procedure included several steps: identification of potential and problems; data collection; product design; expert validation; revision; small-scale trial; product revision; large-scale trial; and product revision.

The expert validators involved four experts, and those were: two experts of handball and two experts of media. The subjects of this study were the coach of Borneo's' Handball

Coach for the small scale, and the coaches participating in the province competition of Senior Handball in East Kalimantan

The type of data used in this study was quantitative and qualitative data. The data were obtained from the questionnaires distributed and assessed by the expert validation and handball coaches (users).

The assessment category consisted of 5 assessment criteria, including poor, fair, good enough, good, and very good. Meanwhile, the qualitative data were obtained from responses, suggestions, or critics of the expert validators and handball coaches.

To calculate the percentage, this formula was used:

$$P = \frac{f}{N} \times 100\%$$

Information:

f = subject frequency

N = total

To make a decision, the criteria by Sudjana was adopted.

Table 1. Percentage Assessment Conversion

Percentage (%)	Value	Category
81 - 100	A	Very good
61 - 80	B	Good
41 - 60	C	Good enough
21 - 40	D	Fair
0 - 20	E	Poor

Source: Sudjana, 2005

RESULTS AND DISCUSSION

The product developed by the researcher is an android-based handball match statistics. This developed product is in the form of an application that can be downloaded using an android phone.

The components of a match statistics in the simple handball statistics application are as follows:

G = Goal (shooting the ball to the opponent's goal)

F = Foul

T = Trapping (more than 3 steps)

D = Double (mistake in bouncing the ball)

Yellow = Penalty card

Red = Penalty card

- 2 = Suspend (player is scored for 2 minutes)
- A = Attack

The validation results of materials experts I and II were obtained from the materials and content quality by the percentage of 75% in step I and 88% in step II from the materials expert I, and by percentage of 81% in step I, and 90% in step II from the materials expert II. Meanwhile, the whole aspects obtained the average 81% from the expert I and 85% from the expert II, including in very good category.

The validation results of media experts I and II were obtained from the display quality aspect by the percentage of 75% in step I and 87% in step II from the materials expert I, and by percentage of 81% in step I and 90% in step II from the materials expert II. Meanwhile, the whole aspects obtained the average 81% from the expert I and 85% from the expert II, including in very good category.

In small-scale trial to the coach of Borneo's handball club, the result of a questionnaire of the display, content, and programming aspects was in a very good category with the average percentage of 83%. In large-scale trial to the coaches participating in the Senior Handball Province Competition, the results of a questionnaire of the display, content, and programming aspects were in a very good category with the average percentage of 88%.

The product trial conducted for the handball players in East Kutai consisting of 10 players, they were given questionnaires about the display, content, and programming aspects. It obtained the percentage of 88% in the very good category.

Table 2. Product Assessment

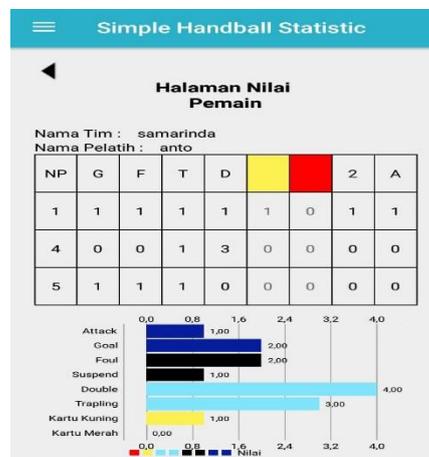
Users	Score	Percentage (%)	Category
1	81	90	A
3	81	90	A
3	82	91	A
4	80	88	A
5	80	88	A
6	78	86	A
7	81	90	A
8	84	93	A
9	79	87	A
10	83	92	A
Average	80	88	A
Total	809		

Indicators of the product success are the result analysis of the observation, questionnaire, and discussion with the expert team (lecturer, coaches, and media experts), and documentation of all subjects tested in this study. Based on the trial, the application of Simple Handball Statistics is obtained and can be used as an evaluation media for handball match statistics in East Kalimantan.

Based on the results of the product trial in small-scale or large-scale, the application has good effectiveness effect because this product is easy to use, and the components are appropriate for the match analysis needs of the coach, so the coach's analysis goal is achieved. Moreover, this product has very good efficiency because this application can be download for free in any android phone.



The components in the application can represent the phenomena that often occur during a match. SHS application can be used anytime and anywhere because it is already in the smartphone.



SHS application can be download on the link <http://bit.ly/simplehs> or using the below QR code:



CONCLUSION

Based on the results of the research and development of android-based application of handball match statistics, it can be concluded that an android-based application of handball match statistics has been created and can be used download on the google drive named Simple Handball Statistic (SHS); SHS product can be used for the quick evaluation process for handball coaches during the training or match; SHS product is effective and efficient to be used as a quick evaluation process in the small-scale for the coach in very good category, in the large-scale trial, it is in very good category.

REFERENCES

- Abdurrochim, M. (2016). Pengembangan model permainan bolatangan untuk anak usia sekolah dasar kelas atas. *Jurnal Keolahragaan*, 4(1), 60-73. Retrieved from <https://journal.uny.ac.id/index.php/jolahragaa/article/view/8136>
- Coelho, E. S. M. J., Moreira, C. H., Gonçalves, C. E., Figueiredo, A. J., Elferink-Gemser, M. T., Philippaerts, R. M., & Malina, R. M. (2010). Functional capacities and sport-specific skills of 14- to 15-year-old male basketball players: Size and maturity effects. *European Journal of Sport Science*, 8(5), 277-285. Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/17461390802117177>
- Hartono, M. (2011). Bola multifungsi untuk pembelajaran pendidikan jasmani olahraga dan kesehatan. *Media Ilmu Keolahragaan Indonesia*, 1(2). Retrieved from <https://journal.unnes.ac.id/nju/index.php/miki/article/view/2030>
- Hermansah, B. (2018). Modifikasi permainan bola tangan terhadap hasil belajar passing dalam pembelajaran bola tangan mahasiswa. *Wahana Didaktika: Jurnal Ilmu Kependidikan*, 16(1). Retrieved from <https://jurnal.univpgri-palembang.ac.id/index.php/didaktika/article/view/1924>
- Muyaroah, S., & Fajartia, M. (2017). Pengembangan media pembelajaran berbasis android dengan menggunakan aplikasi adobe flash cs 6 pada mata pelajaran biologi. *Innovative Journal of Curriculum and Educational Technology*, 6(2), 22-26. Retrieved from <https://journal.unnes.ac.id/sju/index.php/ujct/article/view/19336>
- Ngandhika, E. P., Rustiana, E. R., & Pramono, H. (2018). Development of android-based rhythmic activity learning media on physical education in high school. *Journal of Physical Education and Sports*, 7(2), 106-112. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/23612>
- Prasojo, U., Pramono, H., & Nurharsono, T. (2012). Model permainan bola tangan gawang hidup melalui pendekatan lingkungan sd negeri 2 ngesrebalong tahun 2012. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation*, 1(4). Retrieved from <https://journal.unnes.ac.id/sju/index.php/peshr/article/view/521>
- Rahmat, Z, & Irfandi. (2018). Evaluasi manajemen pengelolaan pelatihan klub olahraga atletik binaan dispora provinsi aceh. *Penjaskesrek Journal*, 5(1), 87-96. Retrieved from <http://penjaskesrek.stkipgetsempena.ac.id/?journal=home&page=article&op=view&path%5B%5D=77>
- Rohman, U. (2017). Evaluasi kompetensi pelatih sepakbola usia dini di sekolah sepakbola. *Jurnal Pendidikan Jasmani dan Olahraga*, 2(2), 92-104. Retrieved from <http://ejournal.upi.edu/index.php/penjas/article/view/09-02-13>
- Soegiyanto. (2010). Pengembangan alat ukur keterampilan dasar bermain softball. *Jurnal Cakrawala Pendidikan*, 29(3), 280-293. Retrieved from <https://journal.uny.ac.id/index.php/cp/article/view/358>
- Sudjana. (2005). *Metode Statistika Edisi ke-6*. Bandung: Tarsito.
- Sulaiman. (2014). Alat tes keterampilan sepak takraw bagi atlet sepak takraw jawa tengah. *Journal of*

- Physical Education Health and Sport*, 1(2), 68-76. Retrieved from <https://journal.unnes.ac.id/nju/index.php/jpehs/article/view/3203>
- Suriasumantri, J. S. (2007). *Filsafat ilmu (sebuah pengantar populer)*. Jakarta: Pancaranintan Indahgraha.
- Winata, R. A., Rahayu, S., & Pramono, H. (2015). Evaluasi program pembinaan prestasi pencak silat. *Journal of Physical Education and Sports*, 4(1), 58-63. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/6909>
- Yuniartik, H., Hidayah, T., & Nasuka. (2017). Evaluasi pembelajaran pendidikan jasmani olahraga dan kesehatan di slb c se-kota yogyakarta. *Journal of Physical Education and Sports*, 6(2), 148-156. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/17389>
- Yunus, M. (2018). Go-jek sebagai simbol perubahan sosial dan ekonomi di kota tegal. *EQUILIBRIA PENDIDIKAN: Jurnal Ilmiah Pendidikan Ekonomi*, 2(2), 59-68. Retrieved from <http://journal.upgris.ac.id/index.php/equilibriapendidikan/article/view/2133>