

Training Aid Development for Twist on Artistic Gymnastics Competition in Pemalang Regency

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Abstract

The study aimed to develop a twist training aid and find out the effectiveness of the twist training aid in increasing somersault twist motion used in training for junior and senior athletes. This study uses a model development method with a qualitative approach. The main procedure in research and development consists of six steps, namely: analyzing the product to be developed, developing the initial product, expert validation, product revision, large-scale trial, product end. The results of the study concluded that the development of twist training aids on the artistic gymnastics race by producing Atlantis products was well categorized and suitable for use as a somersault twist motion training aid in artistic gymnastics for junior athletes, and senior athletes, could improve skills in somersault twist and somersault twist for junior athletes and senior athletes, make it easier for coaches to provide assistance in somersault twist and somersault twist exercises for junior and senior athletes.

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INTRODUCTION

Gymnastics is a productive physical activity to optimize children's growth and development. Gymnastics movements indicate physical activities that require freedom of movement, so it needs to be done naked or half-naked. Its movements stimulate the development of physical fitness components, such as strength and muscular endurance from all parts of the body. Besides that, gymnastics also has the potential to develop basic movement skills, as an important foundation for mastering the technical skills of a sport (Mahendra 2001).

Artistic gymnastics has a variety of numbers, in men competing for floor numbers, bracelets, saddle horses, parallel bars, single bars, jump tables, while in artistic gymnastics girls compete in jumping table floor numbers, multilevel bars, balance beams (Aka, 2009).

Gymnastics has a variety of very complex movements, including rolling forward, rolling backward, candles, wheels, etc. Advanced gymnastic movements use high courage in gymnastics include flakes, front twist somersault, rear twist somersault, twist somersault, etc.

With regard to the fostering and development of sports achievements which have been contained in Law Number 3 of 2005, article 27 paragraph (3) emphasized that the fostering and development of performance sports are carried out by coaches who have qualifications and certificates of competency that can be assisted by sports personnel with a science and technology approach.

Coaching is an important process in realizing achievements in sports. Coaching that is carried out systematically and continuously will be able to support the development of sports achievements. Sports coaching is divided into three stages, namely the promotion phase, the nursery stage, and the achievement development stage (Dinpora, 2014).

Regarding sports performance coaching, many factors must be considered, including clear coaching goals, systematic training programs, appropriate training materials and methods, and evaluations that can measure the success of the

coaching process itself. Besides that, it needs to be considered on the characteristics of athletes who are fostered both physically and psychologically, the ability of the trainer, facilities and infrastructure, and the condition of the coaching environment (Tommy Soenyoto, 2004).

The role of the coach in fostering athletes is very influential on the results of athlete achievement (Mahendra, 2002). In training to get the movement that developed did not escape a difficulty coach in assisting in helping movements that are high kites, male movements, and double movements in the air. The trainer only provides direction in verbal form, while for athletes, if the lack of motion assistance when carrying out the movement is prolonged to be accepted and practiced because the movements that develop require very high courage.

Movement exercises are based on muscular muscle strength so that they are lighter in motion. According to Nossek (1982) to increase muscle endurance, exercise must be done repeatedly. Coordination is an implement ability to integrate types of movements into more specific forms (Decaprio, 2013). Hidayat (2011) states that training is an activity of giving treatment to individuals to improve their talents, skills, physical, and emotional conditions in the sport they practice.

Aids that are used in doing somersault twist can use a safety belt, but in its use, it is only limited to twist somersault in the form of a forward or backward twist. Old products are continually being redesigned, and new products are continually being developed (Handoko, 2000).

With the very rapid development of motion each year, athletes are asked to be able to do higher movements. Researchers' observations from the motion guides in 2009 and 2017 have differences in ratings. (FIG, 2017).

Achieving achievements in the world of sports require practice, and training is a repetitive and progressive process to increase the potential to achieve maximum performance (Apta, 2015).

Artistic gymnastics achievements in Central Java have not been able to be maximized at the National level, the medal acquisition from

year to year has declined. Whereas in the regions, particularly the DULONGMAS region (the Kedu, Pekalongan, and Banyumas residency areas), it is still challenging to compete at the provincial level. Lack of availability of tools for training, especially for twist somersault training. One of the factors causing the possibility of the price of a standard twist somersault tool, which is very expensive, causing Persani Pengcab unable to buy and own the device, and Persani Pengcab only relies on manual assistance from the trainer. In gymnastics workshops in areas where their gymnastics equipment is still not adequate, always underestimate the use of assistive devices, even though the presence of these aids is faster in the process of developing movement in athletes compared to manual assistance. The availability of twist somersault training aids (rotator twisting belts) at PERSANI District Officers in the DULONGMAS Region (Kedu, Pekalongan, and Banyumas residencies) do not yet have the equipment.

This research aims to develop a twist training aid. Know the effectiveness of twist training aids in improving twist somersault motion exercises.

METHODS

This research is research and development. Development research methods are research methods used to produce specific products and assess the effectiveness of these products (Sugiyono, 2013).

Research and development can be defined as a research method that intentionally, systematically, aims to find, find, formulate, improve, develop, produce, test the effectiveness of the product, with specific procedures that are superior, effective, efficient, productive, and meaningful.

The product design developed in this study is a twist training development model following the objectives set in the study. The product evaluation criteria for the twist training tool development model use assessment criteria that have been developed and have been used by the Deputy for Sports Performance Improvement,

Assistant Deputy for Sports Science and Technology, Ministry of Youth and Sports of the Republic of Indonesia in 2010 and 2011.

The research procedure in this study refers to the development procedure which is then simplified with the first step determining potential problems, data collection, product design, design validation, phase I revision, small scale trial, phase II revision, large scale trial, and the final product (Borg and Gall, 2003).

Product development is a series of activities that start from the analysis of perceptions and market opportunities, then end with the production, sales, and product delivery stages (Ulrich and Steven, 2001).

The conclusion drawn in this study was a triangulation of data involving lecturers (experts), trainers, and artistic gymnastics athletes in Pemalang Regency in the form of questionnaires and interviews. The questionnaire is a data collection technique by giving respondents written questions to answer. Questionnaire can be a closed/open question/statement. (Sugiyono, 2013)

The data sources of this research are primary data sources and secondary data sources. In this study, trials were conducted on a small scale and large scale. The small-scale trial consisted of 4 athletes, namely one junior male athlete, one junior female athlete, one senior male athlete, and one senior female athlete.

After a small-scale trial and revision, a large-scale trial was conducted by all athletes who practice at Sanggar Keong Mas, Pemalang Regency, in 2017. This study uses descriptive percentage analysis techniques. Descriptive percentage analysis techniques are used to process data obtained from the results of small-scale trials and large-scale trials. The results of data analysis form the basis for the improvement of this development research.

RESULTS AND DISCUSSION

Atlantis is a breakthrough and idea from a Twisting Belt tool. Atlantis is a tool designed to facilitate somersault twist exercises in artistic gymnastics. This tool is installed hanging above

the mat and can be used on several devices on artistic gymnastics. This tool consists of two parts, namely the outer circle and seat belts. The outer circle is made of 1-inch iron with an inner diameter of 0.4 meters formed by a circle. The second part is the seat belt that functions as a tool hook with the user's body which is made with mbtech fabric that is strong and soft so that it is comfortable to use, the seat belt is linked to the outer ring supported by a 7 milli meter wire that follows the outer circle and supported by iron given a wheel so that it can rotate to the left or right. In the outer ring, there are two hooks as a place to tie a rope, which will be used for tweaking so that they can do the movement by hovering on the assisted pulley that attaches to some artistic gymnastics tools.

The movement of floating in the air with a twist somersault on senior and junior athletes in Persani, Pemalang Regency can be trained with this tool. The advantages of this tool compared to the previous tool that is economical, this tool is cheaper than the previous tool.

Validation from gymnastics experts and gymnastics equipment experts states that whether this product is suitable for use, as well as suitable for twist somersault exercises in the artistic gymnastics athlete Pengcab Persani, Pemalang Regency.

Validation is carried out by a gymnastics expert, namely Dr. Bambang Priyono, M.Pd. who is also a gymnastics lecturer at Universitas Negeri Semarang. After receiving direction and input from him, the researcher validated with Mr.

Agus Dermawan, M.Pd. as a gymnastics equipment expert, he is also a gymnastics lecturer at Universitas Negeri Semarang. Mr. Rubiyono as a validator of the artistic gymnastics trainer, he is the trainer of the Sanggar Senam Keong Mas, Persani District, Pemalang Regency.

The initial Atlantis product specifications are as follows: (1) Atlantis as a tool of twist somersault motion training on artistic gymnastics, (2) The material consists of two parts, namely iron pipe and mbtech fabric, (3) Outer diameter of 0.4 meters, (4) Safety coats can be widened and reduced to adjust the athlete's waist size, (5) The cogs use five bearings.

Atlantis is used by hanging with a rope-assisted by a pulley to adjust the height. The following are the results of filling in the questionnaire of gymnastics experts and gymnastics equipment experts for the initial product of Atlantis.

After expert lecturers and revisions validated the Atlantis product were made, the Atlantis product was tested on a small scale at athlete the Persani Pengcab, Pemalang Regency. This trial aims to determine the shortcomings of the product before large-scale trials are conducted. This scale trial was held on Monday, July 2019 at Pengcab Persani, Pemalang District, which involved 1 male senior athlete, 1 male junior athlete, 1 female senior athlete and 1 female junior athlete. During the trial, there were constraints on the body belt that was still loose when used by junior athletes.

Figure 1. Comparison of Twisting Belt



The small scale trial and phase 1 revision have been completed so the next stage is a large scale trial. This trial was held on Wednesday,

July 10, 2017 at "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency.

This large-scale trial involved all athletes at Sanggar Senam Keong Mas, Pengcab Persani, Pemalang Regency. Large-scale trial data are observations, interviews, questionnaires, and documentation from trainers and athletes at Sanggar Senam Keong Mas, Pengcab Persani,

Pemalang Regency. An indicator of whether the Atlantis product is following the objectives of the study is to count the number of somersault twist movements that can be done by senior and junior athletes at Sanggar Senam Keong Mas, Pengcab Persani, Pemalang Regency.

Table 2. Validation Results of Lecturer of Motions and Gymnastics Equipment Expert

Criteria	Assessment indicator	Motion expert	Tool expert	Coach
Originality aspect	Is the work of researchers	8	8	8
	Has a distinguishing feature with previous products	9	9	8
Usability aspect	Has advantages in terms of development results	9	9	7
	Has advantages in terms of product manufacturing materials	4	4	3
	Has the advantage in terms of operating the tool	4	5	4
Usability aspect	Has the advantage in terms of maintenance	3	5	4
	Having the power to practice artistic gymnastics	12	13	14
Economic aspects	Having a positive value in the application of technology	4	4	3
	Development of tools can lead to industry	4	4	4
	Has commercial potential and market reach	8	9	8
Safety aspects	Have a good level of security for athletes	8	8	9
Comfort aspects	Have a level of comfort that is good for athletes	8	9	7
Total (%)		81	87	79
Category		Very good	Very good	Good

Researchers recorded and gave questionnaires to Sanggar Keong Mas athletes, Pengcab Persani, Pemalang Regency, to complete triangulation data, namely from expert lecturers, trainers, and athletes. The researcher gave direction and helped in the movement to the Sanggar Keong Mas athlete, Pengcab Persani, Pemalang Regency to carry out the technique used in twist somersault movements that were given the research to be continued and carried out by the athletes.

The successful and unsuccessful twist somersault is counted by other participants who are not moving. When carrying out the movement while on the air, the researcher is helped by pulling a rope to lift participants who are doing the movements by other participants who are not doing, this research lasted for 4 hours. Adjusting to the training time at the Keong Mas Studio, Pengcab Persani, Pemalang Regency, which starts from 3:00 to 18:00. The researcher allowed making ten movements for each participant.

Table 3. Large-scale Trial Data

Name	L/P	Twist somersault	Respodent results (questionnaire)	Percentage
Nandeska Paksi B.	L	8	81	81
Yulia Tri Handayani	P	8	82	82
Dina Tri Oktaviani	P	9	83	83
Essa Sabtuwara	P	7	79	79
Dea Nova Andrean	L	7	85	85
Ririn Damar Jati	P	9	84	84
Esti Bekti Warapsari	P	6	83	83
Gandis Arum Sekar D.	P	5	84	84
Lintang S.	P	7	90	90
Ahmad Mubakir	L	9	85	85
Arif Dwi S.	L	5	86	86
Fatkhiyah	P	8	81	81
Ristianti	P	6	87	87
Niken Dwi M.	L	7	85	85
M. Chirzy A.	L	5	84	84
Aqilla Prisi G	P	7	82	82
Sausan Afra G	P	8	83	83
Average		7	84	84
Category		Good	Very good	Very good

The product comparison referred to in this study is the Atlantis product specifications with the Twisting Belt that has been bought and sold. Some breakthroughs made by researchers to add quality and the quality of Atlantis so that this product can be a useful finding and worthy of consideration by the trainer to help the existing circumstances.

A comparison of existing products also illustrates the usability that can be compared to

promote innovations from researchers to be studied and reviewed as study material for further research from previous studies and can be redeveloped for researchers after analyzing these products in more depth.

Here is a comparison of Atlantis with Twisting belts that have been circulating on the world market.

Figure 2. Comparison of Atlantis with Twisting Belt



Atlantis

Price Rp. 750.000,-



Twisting Belt

Price \$625.00 (Rp. 8.750.000,)

The results of the validation by the movers through the questionnaire showed an excellent category, which was 81. From this category, Atlantis is feasible to be used in a twist somersault training aid for the "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency. Validation results from gymnastic experts showed a figure of 87, categorized Excellent, which means that Atlantis is good and feasible to use for twist somersault training tools for athletes of the "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency. The results of the validation of the "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency showed a figure of 79, in the Good category. This means that Atlantis is good and feasible to use for twist somersault training tools for athletes of the "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency. Respondent test results on Atlantis showed a figure of 84% and was categorized as "GOOD", and the test equipment respondents could do somersault movements using aids showed an average of 7 times of

movements so that it was categorized as "GOOD" and could be used for twist somersault training aids for athletes "Sanggar Senam Keong Mas" Pengcab Persani, Pemalang Regency.

CONCLUSION

Research "Development of Training Aid Twist on Artistic Gymnastics Race Numbers" by producing Atlantis products, categorized as good and feasible to be used as aids for the exercise of the twist of artistic gymnastics twist on "Keong Mas Gymnastics Studio" Persani Pengcab, Pemalang District. This can be seen from the results of the validation of gymnastics experts, gymnastics equipment experts, and all athletes. And the trainer can be used as a tool to practice somersault movements and somersaults on artistic exercises.

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