
DEVELOPMENT OF A MODEL OF REACTION SPEED TRAINING TOOLS FOR SITTING VOLLEYBALL ATHLETES NPC LAHAT DISTRICT

Mohd. Yoga Saputra¹ , Muslimin²

Sport Education, Faculty of Social and Humanities, Universitas Bina Darma, Palembang, Indonesia

Info Artikel

Article History:

Received

Revised

Accepted

Available online

*Keywords: tool
development, exercise
model, reaction speed,
sitting volleyball*

Abstract

This study aimed to develop a model of a reaction speed training tool for NPC Sitting Volleyball athletes in the Lahat Regency. This type of development research uses the Research & Development development model approach developed by Borg & Gall. The research subjects were 24 male and female sitting volleyball athletes at NPC Lahat Regency. The data collection instrument uses a questionnaire, observation, and skill test model training tools. Data analysis techniques use the percentage %. The results of the study were based on validation experts who were assessed by two experts, namely volleyball learning experts and coach practitioner experts. The results of the small group trial were carried out on sitting volleyball athletes from NPC in Lahat Regency with a total of 12 athletes. The results of the small-scale trial with a percentage Score of 91% valid with revisions and the large-scale trial obtained a percentage score of 93% valid without revisions which is in the good/decent category. Thus, it can be concluded that the development of a reaction speed training pool model for sitting volleyball athletes at NPC Lahat Regency can be used to increase the reaction speed of sitting volleyball athletes. The novelty of this development model is that it uses media tools and is supported by an arrangement of training models which are of course the characteristics of sitting volleyball athletes without losing the aim of reaction speed training.

Coresspondensi Author email:

© 2021 By Author

Licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

INTRODUCTION

The role of sport is very important in the lives of people with disabilities, people who are born into the world with disabilities tend to experience many obstacles in various areas of life, which means that there are many physical imperfections in certain people. The factor that causes people with disabilities to potentially experience obstacles to self-actualization is self-confidence. The results of research conducted by Micoogulari, Odek, and Beyaz (2017) on Turkish students found that self-confidence, which is part of mental toughness, remains consistently used as one of the basic needs for sports training with assumptions and continues to show the potential importance of Sport Mental Toughness (SMT). In a physical education learning environment, sport represents a person's ability to meet the needs of practice and competition, increasing determination, focus, self-confidence, and maintaining control under pressure.

The lack of training equipment and the condition of athletes - athletes with disabilities find it very difficult to start training compared to normal athletes. Therefore, reaction speed training is very important to help improve the ability to carry out sports activities to increase achievements. According to Rui, Hugo, et al (2014: 475) "The speed of development of knowledge and technology highlights the importance of good and up-to-date educational programs in all professional fields, including sports coaching." the importance of good and up-to-date educational programs in all professional fields, including sports coaching). According to (Harsono, 2015), Reaction speed is the quality that allows starting a kinetic answer as quickly as possible after receiving a stimulus. Currently, the development of technology in the world is very rapid, the development and technology of sports is needed for the advancement of sports achievements of people with disabilities.

The development of science and technology currently emphasizes the interests of educational programs that move in all professional fields of science and include sports coaching (Rui et al., 2014). With the development of technology at this time the author wants to develop a tool that is designed in such a way with the basis of sports science to help the coach provide training programs for athletes, especially the Sitting Volleyball sport.

The specifications of the products developed in this study are in the form of a model of reaction speed training aids used for training and increasing reaction speed in sitting volleyball athletes NPC Lahat Regency and special preparation for trainers directly. This product is expected to be a learning resource for athletes undergoing training. Assumptions of research and development of tools This speed is very influential on the reaction speed of Sitting Volleyball athletes. This research follows the flow of research and the development of tools can be a reference for coaches to improve athlete performance and increase knowledge.

METHODS

Based on the problems discussed earlier, the method used is the development research method, or in English terms Research and Development is a research method used to produce certain products and test the effectiveness of these products. According to Sugiyono (2009: 407) the Research and Development method is a research method that produces a product in a particular field of expertise. Measuring instruments in research are usually called research instruments (Sugiyono, 2018: 293) which are followed by certain by-products and have the effectiveness of a product. data collection using research instruments, namely the product trial, the subjects tested in this study were 24 athletes sitting volleyball NPC Kab. Lahat. This data collection technique uses a needs analysis questionnaire, validation questionnaire, athlete response questionnaire, and documentation tools.

RESULT

The following presents the data obtained as a result of the research conducted. The product developed is named "Development of a model of reaction speed training tools for sitting volleyball athletes NPC Lahat Regency". This product was developed to provide athletes with a new atmosphere in running a reaction speed training program, increase enthusiasm, increase motivation, technological insights for athletes and coaches.

The product was validated by 2 expert validators, namely volleyball learning expert Dr. Bangkit Seandi Tarore, lecturer at Bina Darma University Palembang, and coach practitioner Ali Supratman, M.Pd., SON volleyball coach.

Table 1. Product Assessment by Volleyball Learning Experts

No	Assessment	Question					Description
		1	2	3	4	5	
1.	Model of reaction speed aids according to the characteristics of sitting athletes volleyball athletes.					✓	
2.	Practical and portable tool design.					✓	
3.	This tool can be used as an independent training medium independently.					✓	
4.	facilitate athletes in the training process					✓	
5.	Assist trainers in arranging variations exercises.				✓		
6.	Encourage sitting volleyball athletes to be active move.				✓		
7.	Increase the motivation of sitting volleyball					✓	

	athletes		
8.	Clarity of product use instructions.	✓	
9.	Safe to apply in practice.	✓	
10.	The variety of training models used is interesting.	✓	
11.	The exercise variations are not monotonous.	✓	According to Characteristics
12.	Can increase the reaction speed of athletes.	✓	According to the dominant physique
13.	The accuracy of choosing a training model for athletes sitting volleyball.	✓	
14.	The suitability of the tools and materials used.	✓	
Total Score		24	35
Total Number			70
Percentage			84%

Initial results regarding the product development model of training tools for the reaction speed of sitting volleyball athletes show that the product developed is 84% which is in the good/appropriate category, which means that the development of a model of training tools for the reaction speed of sitting volleyball athletes can be tested to the next stage.

Table 2. Product Assessment by Expert Practitioners

No	Assessment	Penilaian					Keterangan
		1	2	3	4	5	
1.	Model of reaction speed aids according to the characteristics of sitting athletes volleyball athletes.					✓	
2.	Practical and portable tool design.					✓	
3.	This tool can be used as an independent training medium independently.				✓		
4.	facilitate athletes in the training process					✓	
5.	Assist trainers in arranging variations of exercise				✓		
6.	Encourage sitting volleyball athletes to be active move.					✓	
7.	Increase the motivation of sitting volleyball athletes					✓	
8.	Clarity of product use instructions.					✓	
9.	Safe to apply in practice.				✓		
10.	The variety of training models used is interesting.			✓			
11.	The exercise variations are not monotonous.					✓	
12.	Can increase the reaction speed of athletes.					✓	
13.	The accuracy of choosing a training model for athletes sitting volleyball.					✓	

14. The suitability of the tools and materials used.	✓
Total Score	3 12 50
Total Number	70
Percentage	93%

Initial results regarding the product development of a model of training equipment for the reaction speed of sitting volleyball athletes show that the product developed is 93% which is in the very good/feasible category, which means that the development of a model of training equipment for the reaction speed of sitting volleyball athletes can be tested to the next stage.

Table 3 Small Scale Trial Results

Assessment	Skor
1. Model of reaction speed aids according to the characteristics of sitting athletes volleyball athletes.	53
2. Practical and portable tool design.	61
3. The instructions of the exercise model are quite clear.	55
4. The images in the developed model are easy to understand.	56
5. The developed tool is by the characteristics of sitting volleyball.	55
6. The developed model can encourage cognitive, affective, and psychomotor aspects of volleyball athletes psychomotor aspects of volleyball athletes.	55
7. Seated volleyball athletes can practice movements by the training model model that was developed.	54
8. The tools that are developed can spur athlete creativity and motivate athletes to do the exercise.	55
9. The tools developed can spur athlete creativity and motivate athletes in doing exercises athletes in doing exercises	54
10. The design of the developed tool is attractive.	54
11. Models and tools facilitate the process of training athletes' reaction speed.	55
12. Can maintain the athlete's endurance.	47
13. The model activities and tools developed are appropriate.	54
14. The developed tool is suitable for use in sitting volleyball athletes.	56
Total Score	764
Total Number	840
Percentage	91%
Category	Excellent

The questionnaire results from small-scale trials regarding the development of a model of athlete reaction speed training tools for this sitting volleyball NPC Kab. Lahat is 91% which is in the very good category.

Table 4. Large-Scale Trial Results

No	Assessment	Skor
1.	Model of reaction speed aids according to the characteristics of sitting athletes volleyball athletes.	109
2.	Practical and portable tool design.	120
3.	The instructions of the exercise model are quite clear.	116
4.	The images in the developed model are easy to understand.	112
5.	The developed tool is by the characteristics of sitting volleyball.	108

6.	The developed model can encourage cognitive, affective, and psychomotor aspects of volleyball athletes psychomotor aspects of volleyball athletes.	110
7.	Seated volleyball athletes can practice movements by the training model model that was developed.	114
8.	The tools that are developed can spur athlete creativity and motivate athletes to do the exercise.	108
9.	The tools developed can spur athlete creativity and motivate athletes in doing exercises athletes in doing exercises	112
10.	The design of the developed tool is attractive.	105
11.	Models and tools facilitate the process of training athletes' reaction speed.	117
12.	Can maintain the athlete's endurance.	102
13.	The model activities and tools developed are appropriate.	109
14.	The developed tool is suitable for use in sitting volleyball athletes.	118
Jumlah Skor		1560
Jumlah Total		1680
Percentage		93%
Category		Excellent

The questionnaire results from the large-scale trial regarding the development of a model of athlete reaction speed training tools for this sitting volleyball NPC Kab. Lahat is 93% which is included in the very good category.

After the product has been validated by experts and improvements have been made based on suggestions from experts the product is declared suitable for testing. Small-scale trials were carried out on 12 athletes sitting volleyball NPC Kab. Lahat, then the product was reassessed by experts and made improvements, input - input and suggestions from experts. In the next stage, a large-scale trial was carried out again on 24 athletes sitting volleyball NPC Kab. Lahat. The development of a speed reaction tool model for sitting volleyball athletes NPC Kab. Lahat is declared feasible to use as the development of a speed reaction tool model and as a final product the researcher makes an exercise model as a guideline for implementing training for athletes.

Based on the results of the product trial, the data generated shows that the trial results are in the very good category. It can be seen from the results of the small-scale trial getting a percentage value of 91% valid without revision and the large-scale trial getting a percentage value of 93% valid without revision. These results refer to the predetermined assessment guidelines. The eligibility categories used in this study are divided into several parts, namely, values < 40% are categorized as not good / not feasible, 41% - 55% are categorized as less good / less feasible, 56% - 75% are categorized as quite good / quite feasible, and 76 -100% are categorized as good/feasible.

DISCUSSION

Based on observations in every training process carried out by Sitting Volleyball athletes at NPC Lahat Regency, it is necessary to develop a model of training aids to support and increase the reaction speed of athletes. During the implementation of reaction speed training, the coach only uses the drill training method with the ball, has little training time, and lacks of tools to do reaction speed training. Therefore, the researcher wishes to develop a reaction speed training aid for sitting volleyball athletes at NPC Kab. Lahat. At the data collection stage, the researcher analyzes the development of a reaction speed training tool model and from the results of this analysis, the researcher has the initiative to develop a model of reaction speed training tools for Sitting Volleyball athletes NPC Kab. Lahat to become a training method that motivates sitting volleyball athletes to be more enthusiastic and reduce boredom due to monotonous training methods when running an exercise program.

The beginning of product development is made into a product in the form of developing a model of speed reaction training tools for sitting volleyball athletes NPC Kab. Lahat. The development of a model of speed training tools for sitting volleyball athletes NPC Kab. Lahat can be used as a reference or guideline for speed reaction training, especially in the field of sitting volleyball that can be applied. This product development process has gone through research, development procedures, some planning, design, and evaluation. After the product is produced, it needs to be evaluated by experts through validation and needs to be tested on athletes. Evaluation is carried out on volleyball learning experts and coach practitioners. Based on input from expert practitioners, the coach reduced the distance between the pole lights from 4 meters to 3 meters.

After obtaining approval from the experts, the next stage of research with small-scale trials and then the implementation of how the product works is made in the form of a video. Based on the results of the small-scale trial, it got a percentage value of 91% valid without revision. The results of the assessment of the product development model of the speed reaction tool for sitting volleyball athletes NPC Kab. Lahat from volleyball learning experts and coach practitioners in the questionnaire sheet, that overall it is very good and there is no input from volleyball learning experts. At the large-scale trial stage regarding the development of a model of speed reaction training tools for sitting volleyball athletes NPC Kab. Lahat gets a percentage value of 93% which is in the very good/feasible category, which means that the development of a model of speed reaction training tools for sitting volleyball athletes NPC Kab. Lahat can be tested to the next stage.

The results of the assessment of the product development model of the speed reaction tool for sitting volleyball athletes NPC Kab. Lahat from volleyball learning experts and coach practitioners in the questionnaire sheet, that overall it is very good and there is no input from volleyball learning experts. Based on the results of the small-scale trial conducted, data can be generated that shows a percentage value of 91% in the category of very good valid without revision and the large-scale trial conducted gets a percentage value of

93% in the category of very good valid without revision. These results refer to the predetermined assessment guidelines, so it can be concluded that the results of the research on the development of a speed reaction training tool model for sitting volleyball athletes NPC Kab. Lahat is "Worthy".

CONCLUSIONS

The development of a model of speed reaction training tools for sitting volleyball athletes NPC Kab. Lahat that has been developed is feasible and by the characteristics of sitting volleyball athletes The results of this product are declared feasible by conducting a small-scale trial with 12 sitting volleyball athletes getting the results of the percentage data obtained 91% valid without revision and large-scale trials with 24 sitting volleyball athletes who get a percentage value of 93% valid without revision.

REFERENCES

Bibliography of books.

- Arimbi, Poppy Elisano Arfanda, Lita Puspita, & Wahyana Mujari Wahid. (2022). *Implementasi Ilmu Keolahragaan dalam Perkembangan Olahraga Disabilitas Indonesia*. Pekalongan, Jawa Tengah: PT. Nasya Expanding Management.
- Doni Pranata. (2023). *Pembelajaran Bola Voli*. Jawa Tengah: PT. Pena Persada Kerta Utama.
- Muslimin, Moch. Asmawi, Samsudin & Destriana. (2021). *MODEL KETERAMPILAN BOLA VOLI*. Palembang: Bening Media Publishing
- Official Sitting Volleyball Rules 2017-2020*. (2017). World ParaVolley Board of Directors.
- Official Sitting Volleyball Rules 2022-2024*. (2022). World ParaVolley Board of Directors.
- Sugiyono. (2011). *Metode Penelitian Pendidikan : Pendekatan Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.
- Sugiyono. (2018). *Metode Penelitian Kuantitatif, Kualitatif dan R&D* . Bandung: CV. Alfabeta.
- Sapta Kunta Purna, Deddy Whinata Kardiyanto, & Prayogi Dwina Angga . (2020). *KERANGKA PEMBINAAN OLAHRAGA DISABILITAS*. Sidoarjo: Zifatama Jawara.
- Trianto. (2012). *Model Pengembangan Terpadu*. Jakarta: Bumi Aksara.

Bibliography of journals.

- Abrar, R. (2020). Bola Voli <https://osf.io/ej6x8/download>
- Arif Hidayat, Muslimin, & Ali Kasim. (2018). PENGEMBANGAN PERANGKAT TES DAN PENGUKURAN PASSING BOLA VOLI BERBASIS KOMPUTER. *Bandung Institute of*

Technology.

- Bayu Adhitya Bagaskara. (2022). Pengembangan Alat Latihan Osborn Untuk Meningkatkan Power Otot Lengan Dalam Melakukan Smash Cabang Olahraga Bola Voli. *UNY*.
- Cottini, L. (2020). Valutazione e metodi d'intervento, Carocci editore. *Journal of Physical Education and Sport*.
- Dewi Endriani, M. (2019). Pengembangan Kecepatan Reaksi Pada Permainan Bola Voli. *Jurnal Prestasi*.
- Destriana, Destriani, Ahmad Richad Victorian, & Syariah. (2023). Android-Based Volleyball Passing Test Instrument Development Design. *Jp.jok: Jurnal Pendidikan Jasmani, Olahraga dan Kesehatan*.
- Giartama, Destriani, Waluyo, & Muslimin. (2020). Efektivitas alat tes servis bola voli berbasis mikrokontroler. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*.
- Klostermann, C, & Nagel, S. (2012). Changes in German sport participation: Historical trends in individual sports. *International Review for the Sociology*.
- M Suhairi, & Zainal Arifin. (2022). Pengembangan Alat Drill Smash Bola Voli berbasis reaksi menggunakan Android. *Multilateral*.
- M Suhairi, & Zainal Arifin. (2022). Pengembangan Alat Drill Smash Bola Voli berbasis reaksi menggunakan Android. *Multilateral*.
- M. Aulia, D., & D. Endriani. (2019). PENGEMBANGAN ALAT KECEPATAN REAKSI PADA PERMAINAN BOLAVOLI. *Jurnal Prestasi*.
- Micoogullari, B.O., Odek U., & Beyaz, O. (2017). Evaluation of Sport Mental Toughness and Psychological Wellbeing in Undergraduate student-athletes. *EDUCATIONAL RESEARCH AND REVIEWS*.
- Molik B., Kosmol, A., & Skucas, K. (2008). Sport-specific and general sporting physical fitness of sitting volleyball athletes. *Physiotherapy*.
- Nasrulloh, & Ahmad dkk. (2018). *Dasar Dasar Latihan Beban*. Yogyakarta: UNY Press.
- Nauka. (2019). *Pemain Bola Voli Prestasi*. UNNES Semarang.
- Nugroho, R. S., Kristiyanto, A., & Purnama, S. K. (2019). FAKTOR KEBERHASILAN ATLET NPC INDONESIA DALAM MERAH MEDALI PADA AJANG MULTI EVENT ASIAN PARAGAMES 2018 DI JAKARTA. *UNS*.
- Sudarmono, M. (2010). Pengembangan Model Pembelajaran Sepak Bola melalui Permainan Sepak Bola Gawang Ganda Bagi Siswa SMP N 3 Ajibarang Kabupaten Banyumas Tahun Ajaran 2009/2010. *UNNES Semarang*.
- Suhairi, dkk (2022). Pengembangan alat drill smash bola voli berbasis reaksi menggunakan android. *Multilateral*
- Wahid Adi Kusuma, Syafaruddin, & Destriana. (2018). Latihan Skipping terhadap Peningkatan Keterampilan Open Smash pada Permainan Bola Voli. *Altius: Jurnal Ilmu Olahraga dan Kesehatan*.

Bibliography from website

Mengenal Bola Voli Duduk Salah Satu Cabor di Asian Para Games 2018. (2018, 09 28). Retrieved from medcom.id: <https://www.medcom.id/olahraga/sports-lainnya/1bVG757k-mengenal-bola-voli-duduk-salah-satu-cabor-di-asian-para-games-2018>



Altius: Jurnal Ilmu Olahraga dan Kesehatan

<https://ejournal.unsri.ac.id/index.php/altius> e-ISSN:

2685-0516 | p-ISSN: 2087-927X



**SURAT PERNYATAAN ARTIKEL DITERIMA
LETTER OF ACCEPTANCE (LOA)**

Edito in Chief Altius: Jurnal Ilmu Olahraga dan Kesehatan menyatakan, naskah artikel ilmiah dengan judul:

**DEVELOPMENT OF A MODEL OF REACTION SPEED TRAINING TOOLS FOR
SITTING VOLLEYBALL ATHLETES NPC LAHAT DISTRICT**

Yang diserahkan oleh:

Nama : Muslimin, Mohd. Yoga Saputra

Afiliasi : Universitas Bina Darma

Artikel Diterbitkan : November 2023

Dinyatakan diterima untuk dipublikasikan pada Altius: Jurnal Ilmu Olahraga dan Kesehatan pada edisi Volume 12 Nomor 2 yang akan diterbitkan bulan November 2023. Proses selanjutnya setelah penerimaan naskah adalah proses *Copyediting*, *Layouting*, dan *Production* (Upload ke web OJS).

Demikian surat ini dibuat dan untuk dapat dipergunakan sebagaimana mestinya.

Palembang, 25 September 2023

Editor In Chief




Destriona, M.Pd