International Journal of Physical Education, Sports and Health 2023; 10(5): 176-179

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIF): 5.38
IJPESH 2023; 10(5): 176-179

www.kheljournal.com
Received: 20-08-2023
Accepted: 23-09-2023

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The development of a special sequence physical training model to increase speed, limb power, reactive agility and endurance in youth football performance

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DOI: https://doi.org/10.22271/kheljournal.2023.v10.i5c.3092

Abstract
The aim of this study was to develop a special sequential physical training model to increase speed, leg power, reactive agility and endurance in youth football performance. in detail the objectives of this research 1). to develop a special sequential physical training model to form speed, reactive agility, power and endurance simultaneously. 2). To test the feasibility of the drill training model to increase speed, reactive agility, power and endurance simultaneously. 3). To test the effectiveness of this drill training model, it aims to increase speed, reactive agility, power and endurance simultaneously.
The research method used in the study is research & development (R&D), Brog & Gall. using five steps without reducing their meaning (1) first assessment and information gathering (2) Forming the first product (3) Forming a Hypothetical product (4) Effectiveness testing (5) Dissemination. The research subjects for assessment were 3 academic experts and 4 trainers with a minimum C AFC License. In the field trial (feasibility test) 4 teenage soccer athletes were involved. For the effectiveness test, 30 soccer athletes were involved. The data collection technique for preparing a draft special physical training model uses a narrative literature review technique. The steps used to collect expert test data are using the Delphi technique. The steps to collect product effectiveness test data use a pre-experimental research design using a time series design, with a MANOVA test to find out whether it is effective in improving physical health simultaneously.
The results of this study show that (1) this training model product can improve physical fitness simultaneously, (2) this training model is feasible, secure, and safe to use at improving football physicality simultaneously and (3) this training model is effective in improving physical abilities simultaneously has a significance value of 0.000 <0.05 for teenage football athletes. So it can be concluded that this special sequential physical training model is effective in simultaneously increasing speed, reactive agility, leg power and endurance performance in youth football athletes.

Keywords: Drill model, speed, limb power, reactive agility and endurance

Introduction
Physical ability is one of the main factors in achieving optimal abilities in football match (Zouhal, 2021) [9]. The dominant physical components in football performance are speed, leg power, reactive agility and endurance in Sajoto (Nurhidayat R. S., 2019) [5] The factors such as speed, agility, muscle power and reactive agility are extremelly necessary because football requires fast movements to chase the ball, change direction to dribble the ball, change direction quickly to avoid an opponent who will steal the ball, and jump to block the ball, and kick the ball with hit the opponent's goal hard to score a goal (Silva Icha, 2020) [10]. In Europe's top league, one team plays 60 matches in a season in 2018/2019. This results in the importance of dominant physical components in football such as speed, reactive agility, leg power and endurance so that players can always be optimal in every match (Zouhal, 2021) [9]. Apart from that, football performance requires repetitive, fast movements and quick reactions to the side, left, right, forward and backward to chase the ball or carry the ball. In order for football performance to be achieved, dominant physical components are needed, namely speed, leg power, reactive agility and endurance (Robert SK, 2017) [11]. Judging at the physical abilities of the Indonesian national team through a direct interview with the Indonesian men's football team coach, Shin Tae-Yong, revealed that one of the important components in improving Indonesian football performance is increasing dominant physical abilities, through interviews on the PSSI 2022 Youtube Chanel.

This expression indicates that physical abilities Football athletes in Indonesia must be improved and developed.

Validity is obtained to determine the product contents. Validity describes the extent to which the instrument reflects the content (Gefen & Straub, 2004) [3]. Content validity is created from a literature review and then evaluated by an expert jury or panel (Taherdoost, 2018) [6]. Validity and reliability are used to provide guidance in the form of instruments that can be used to assess progress towards achieving important aspects of movement.

Based on the problems mentioned above, the researchers developed a special sequential physical training model to increase speed, leg power, reactive agility and endurance in youth football performance, with the aim of simultaneously increasing the dominant physical components in playing football.

Research Methodology

This study uses an observational study designed for participants consisting of seven experts including five theorists and two who simultaneously improved the dominant physical components in football. The research carried out four stages: namely, the first stage carried out a literature review and carried out a qualitative approach with professional experts in journals related to football physics, to create a special sequential training model to increase speed, reactive agility, leg power and endurance performance in teenage football athletes.

In the second stage, the Delphi method was used to find content validity values. The Delphi method was used to obtain data about experts' opinions about the subject in research (Knoop *et al*., 2013) [4]. Seven of the best experts in their fields carried out expert judgment on the content and construct of the instrument. The third stage, conducting a feasibility test of the training model using qualitative analysis by including expert judgment comments and suggestions for improvement. Stage four, carry out an effectiveness test using a pre-experimental research design with a time series. expert judgment data processing. The assessment scale uses a Linkert scale with values (4) very good, (3) good, (2) poor, (1) very poor. Data analysis steps are used to determine the validity value. where each indicator is calculated for its validity index using Aiken's [24]:

$$V = \sum s / [n(C-1)]$$

$$S = r - lo$$

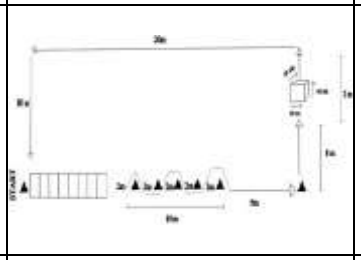
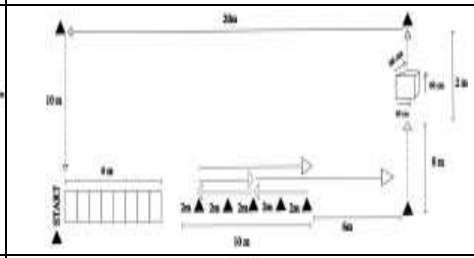
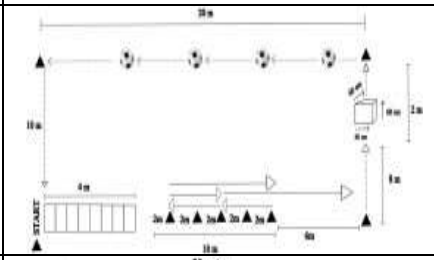
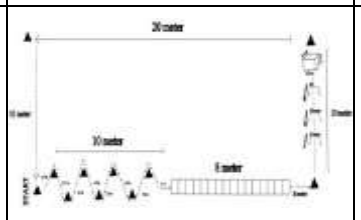
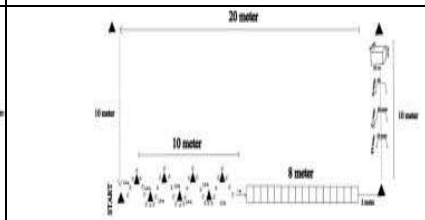
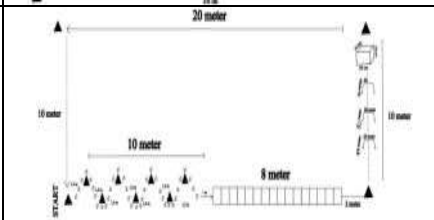
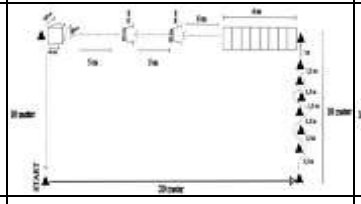
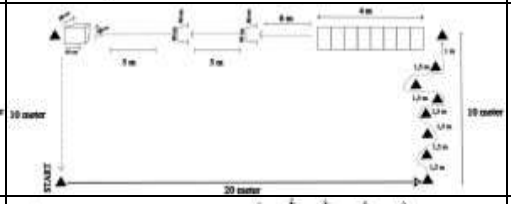
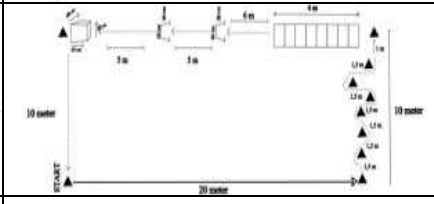
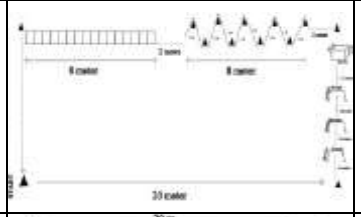
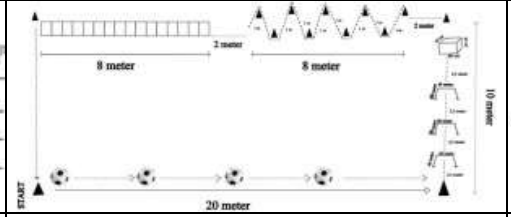
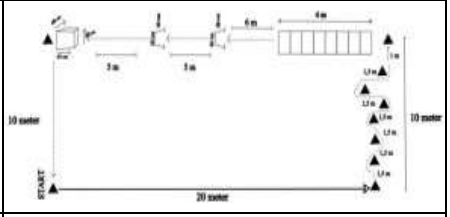
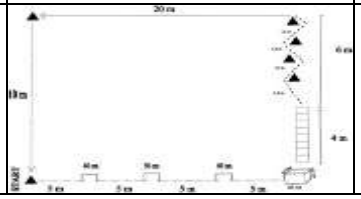
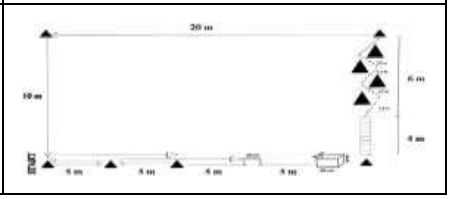
Lo = Lowest score

C = Highest tertinggi

R = number given by the assessor

Result and Discussion

Peneliti ingin mengembangkan model latihan sesuai dengan komponen latihan FITT (Frekuensi, Intensitas, Time dan Type) dengan prinsip overload, progresif, sepesifik, kontinuitas, individualis (Dragan Cvejiÿ, 2018) [2]. Sereta menggunakan kombinasi latihan *Ladder Drill*, *Zig Zag Run*, *Sprint* 20 meter dan Playometik *Jump Box*.

Week	First Session	Second Session	Third Session
1			
2			
3			
4			
5			

The results of this study show that the development of a sequential training model to increase speed, leg power, reactive agility and endurance performance in youth football" youth football" from the results of data analysis shows that:

a) This sequential training model can increase speed, reactive agility, power and endurance simultaneously.
b) This sequential training model is suitable for increasing speed, reactive agility, power and endurance simultaneously.

This sequential training model is effective for increasing speed, reactive agility, power and endurance simultaneously.

The result of Aiken's validity test

Aspects used in creating a football goalkeeper measuring tool include (1) frequency per week according to the goal, (2) number of repetitions according to the training intensity of maximum ability, (3) intensity according to the goal (4) type of training according to the goal and fun, (5). Safe and comfortable to use. The assessment uses a Linkert scale of 1 to 4. The assessment data is listed in Table 1 and then analyzed quantitatively using the Aiken's test.

Table 1: The result of Aiken's analysis test

Instrument of Study		Validator Expert							Σs	V
		1	2	3	4	5	6	7		
1	Is the Exercise Frequency appropriate	4	4	4	3	3	4	3	18	0,86
2	Is the Exercise Intensity appropriate	4	4	4	3	3	4	3	18	0,86
3	Is the Exercise Type appropriate	4	4	4	3	3	4	4	19	0,90
4	Is the repetition appropriate	3	4	4	3	3	4	3	17	0,80
5	Is this type of exercise safe, and comfortable and enjoyable	4	4	4	3	3	4	4	19	0,90

Based on the results of Table 1. Analysis of the Aiken value for exercise frequency received a value of 0.86, the exercise intensity indicator received a value of 0.86, the exercise type indicator received a value of 0.90, the repetition indicator received a value of 0.80, and a safety and comfort indicator of 0.90.

Analysis of test data using Aiken's V with five aspect categories and 7 raters, the V value > 0.73 has high and valid content validity [24]. Based on the data obtained, this special sequential physical training model to improve the dominant physical components of youth football has high validity. With all experts having high agreement.

Reliability Test Result

Interclass correlation coefficient (ICC). Hasil ICC ditabel 2.

Table 2: Reliability ICC Speed

Intraclass Correlation Coefficient							
	Intraclass Correlationb	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.200a	.036	.996	23.324	1	29	.000
Average Measures	.882	.527	1.000	23.324	1	29	.000

Alpha Cronbach

Reliability Statistics	
Cronbach's Alpha	N of Items
.957	30

Table 3: Reliability ICC Reactive Agility

Intraclass Correlation Coefficient							
	Intraclass Correlationb	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.410a	.104	.999	43.132	1	29	.000
Average Measures	.954	.777	1.000	43.132	1	29	.000

Alpha Cronbach

Reliability Statistics	
Cronbach's Alpha	N of Items
.977	30

Table 4: Reliability ICC VO2Max

Intraclass Correlation Coefficient							
	Intraclass Correlationb	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.196a	.038	.996	42.063	1	29	.000
Average Measures	.880	.544	1.000	42.063	1	29	.000

Alpha Cronbach

Reliability Statistics	
Cronbach's Alpha	N of Items
.976	30

Table 5: Reliabelitas ICC Power Tungkai

Intraclass Correlation Coefficient							
	Intraclass Correlationb	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.099a	.015	.991	19.889	1	29	.000
Average Measures	.767	.316	1.000	19.889	1	29	.000

Alpha Cronbach

SReliability Statistics	
Cronbach's Alpha	N of Items
.950	30

Melalui table 2, 3, 4, dan 5 hasil reliabilitas dari test ritest dengan rata-rata nilai 0,870. Berdasarkan hasil nilai ICC klasifikasi reliabilitas test ritest yang diciptakan oleh (Shrout & Fleiss, 1979) maka disimpulkan bahwa kesepakatan reliabilitas substantial agreement antar nilai test rites memiliki konsistensi baik dari komponen kecepatan, Reaktif Agility, Power Tungkai dan Dayatahan dalam sepakbola.

Tabel 6: Norma Reliabelitas ICC

ICC	Agreement
1.0	Perfect agreement
0.99 to 0.81	Almost perfect agreement
0.80 to 0.61	Substantial agreement
0.60 to 0.41	Moderate agreement
0.40 to 0.21	Fair agreement
0.20 to 0.01	Slight agreement
0.0 to -0.1	Poor agreement

***Source*:** (Shrout & Fleiss, 1979)

Tabel 7: Uji MANOVA

Multivariate Tests					
Value		**F**	**Hypothesis df**	**Error df**	**Sig.**
Pillai's trace	,316	6,365[a]	4,000	55,000	,000
Wilks' lambda	,684	6,365[a]	4,000	55,000	,000
Hotelling's trace	,463	6,365[a]	4,000	55,000	,000
Roy's largest root	,463	6,365[a]	4,000	55,000	,000

Dari data di atas terdapat hasil bahwa secara keseluruhan signifikasi data 0,000<0,05 sehingga dinyatakan "Model Latihan Fisik Khusus Berangkai untuk Peningkatkan Kecepatan, Power Tungkai, Reaktif Agility serta Dayatahan Kinerja Sepak bola Remaja" dapat meningkatkan fisik sepakbola secara serempak.

Discussion

Produk yang dihasilkan dari penelitian "Pengembangan Model Latihan Berangkai Untuk Peningkattan Kecepatan, Power Tungkai, Reaktif Agility dan Dayatahan Kinerja Sepakbola Remaja" yaitu berupa model program latihan dalam bentuk buku panduan Latihan. Penelitian ini memberikan hasil dan penafsiran lebih lanjut terkait hasil analisi data yang sudah dikemukakan di atas. Melalui analisi data di atas disimpulkan "Model Latihan Fisik Khusus berangkai dalam Penigkatan Kecepatan, Power Tungkai, Reaktif Agility serta Dayatahan Kinerja Sepak Bola Remaja" ini dapat meningkatka kemapuan fisik sepakbola remaja secara serempak signifikan (nyata). Pembahansan hasil deskripsi data penelitian tersebut dapat dipaparkan lebih lanjut sebagai berikut.

Melalui analisis data didapatkan hasil bahwa terdapat efek yang signifikan dari pengembangan model latihan yang dikembangkan. Olahraga sepakbola adalah olahraga yang kompleks dan dinamis yang membutuhkan komponen fisik yang baik, komponen fisik dominan sepakbola diantaranya adalah kecepatan, power otot, reaktif agility dan daya tahan Sajoto dalam (Nurhidayat, 2019) [5]. Prestasai dalam bermain sepakbola sangat ditunjang oleh komponen fisik tersebut sehingga sangat perlu untuk di tingkatkan. Adapun pembahasan lebih mendalam dari penelitian ini untuk menjawab pertanyaan penelitian dapat peneliti kemukakan antara lain:

a) Model latihan berangkai ini dapat meningkatkan kecepatan, reaktif agility, power dan dayatahan secara serempak.
b) Model latihan berangkai ini layak untuk meningkatkan kecepatan, reaktif agility, power dan dayatahan secara serempak.
c) Model latihan berangkai ini Efekif untuk meningkatkan kecepatan, reaktif agility, power dan dayatahan secara serempak.

Conclusion

Melalui hasil penelitian serta hasil analisis data yang telah dijalankan, didapatkan bebrapa kesimpulan antar lain.

a. Model Latihan Fisik Khusus berangkai untuk Meningkatkan Kecepatan, Power Tungkai, Reaktif Agility dan Dayatahan Kinerja Sepak bola Remaja ini dilakukan dengan 5 tahapan. Hasil penelitian yang telah dilakukan menunjukan bahwa produk yang dibuat dapat meningkatkan fisik serempak.
b. Model Latihan Fisik Khusus berangkai untuk Meningkatkan Kecepatan, Power Tungkai, Reaktif Agility dan Dayatahan Kinerja Sepak bola Remaja. Hasil dari penelitian ini menunjukan bahwa model latihan ini layak dengan keamanan dan keyamanan untuk digunakan untuk meningkatkan fisik atlet sepakbola remaja secara serempak.

Model Latihan Fisik Khusus berangkai untuk Meningkatkan Kecepatan, Power Tungkai, Reaktif Agility dan Dayatahan Kinerja Sepak bola Remaja ini dari hasil penelitan yang didaptkan bahwa model latihan ini efektif dalam meningkatkan kemampuan fisik atlet sepakbola remaja secara serempak.

Reference

1. Alen Rajšp, Iztok Fister J. A Systematic Literature Review Of Intelligent Data. Applied Sciences, Applied Sciences; c2020.
2. Dragan Cvejiÿ SO. Effects Of The Fitt Program On Physical Activity And Health-Related Fitness In Primary School Age. Physical Education and Sport; c2018, 15(15).
3. Gefen D, Straub DW. Consumer Trust in B2C e-Commerce and the Importance of Social Presence: Experiments in e-Products and e-Services. Omega. 2004;32:407-424.
4. Knoop M, Fernandez-Fernandez J, Ferrauti A. Evaluation of a specific reaction and action speed test for the soccer goalkeeper. Journal of Strength and Conditioning Research. 2013;27(8):2141-2148.
5. Nurhidayat RS. Dominant Physical Factor Determinant To Play. 4th Progressive AndSilvia Icha Alviana. (2022) The Effect of Exercise with Ladder Drill Slaloms and Carioca on Speed and Agility; c2019, 6.
6. Taherdoost H. A Review of Technology Acceptance and Adoption Models and Theories. Procedia Manufacturing. 2018;22:960-967.
7. Toni Modric JJ. The Influence of Physical Performance On Technical and Tactical Outcomes in The Uefa Champions League. Bmc Sports Science, Medicine And Rehabilitation; c2022, 8.
8. Vanda Correia JC. Principles of Nonlinear Pedagogy in Sport Practice. Physical Education And Sport Pedagogy; c2018, 18.
9. Zouhal H, Ben Abderrahman A, Khodamoradi A, Saeidi A, Jayavel A, Hackney AC, *et al*. Effects of physical training on anthropometrics, physical and physiological capacities in individuals with obesity: A systematic review. Obesity Reviews; c2020, 21(9).
10. Morgado FN, Da Silva AV, Porrozzi R. Infectious diseases and the lymphoid extracellular matrix remodeling: A focus on conduit system. Cells. 2020 Mar 16;9(3):725.
11. Robert C, Schmid TE, Richard V, Haquette P, Raman SK, Rager MN, *et al*. Mechanistic aspects of the polymerization of lactide using a highly efficient aluminum (III) catalytic system. Journal of the American Chemical Society. 2017 May 3;139(17):6217-25.