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CONTENTS VALIDITY OF BATTERY CONSTRUCTION PENCAK SILAT PHYSICAL TEST IN EARLY AGE (10-12 YEARS)

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Abstract
Evaluation is an important thing in the training process. To carry out an evaluation, good instruments are needed that are to the sport's specifications. Instruments for measuring training results for early-age martial artists have not yet been developed. Thus, this research aims to compile and test the content validity of the physical test battery for early childhood pencak silat. This research is a quantitative descriptive study with survey techniques using the Delphi method. The subjects in this research are two physical conditioning experts, two pencak silat experts, one child development expert, and two pencak silat trainers. he data collection technique in this research used the Delphi technique. The content validation test used the Aiken V formula with the help of 7 experts consisting of 2 physical condition experts, 2 pencak silat experts, 1 child development expert, and 2 pencak silat trainers. The results show flexibility using sit and rich has a validity value of 1, speed using the 30-meter sprint has a validity value of 1, strength using push-ups has a validity value of 0.95, sit-ups have a validity value of 1, and wall sits a validity value of 1, agility using the shuttle run has a validity value of 0.95, and aerobic endurance using the beep test has a validity value of 0.76. The overall content validity of the test instrument is 0.9. Thus, it can be concluded that the physical test battery for early childhood pencak silat has high content validity. The reliability and norms of the early-age pencak silat physical test battery have not been tested. So it is important to test the instrument's reliability and prepare physical test norms for early-age pencak silat in future research.
Keywords*: content validity, battery test, physical test, pencak silat .*

VALIDASI ISI KONSTRUKSI BATERAI TES FISIK PENCAK SILAT USIA DINI (10-12 TAHUN)

Abstrak
Evaluasi merupakan hal yang penting dalam proses latihan. Untuk melakukan evaluasi deperlukan instrumen yang baik dan sesuai dengan spesifikasi cabang olahraga. Instrumen pengukuran hasil latihan pada pesilat usia dini belum tersusun. Sehingga, penelitian ini bertujuan untuk menyusun dan menguji validitas isi kontruksi baterai tes fisik pencak silat usia dini. Penelitian ini merupakan penelitian deskriptif kuantitatif dengan teknik survei menggunakan metode Delphi. Subyek dalam penelitian ini adalah dua orang ahli pengondisian fisik, dua orang ahli pencak silat, satu orang ahli tumbuh kembang anak, dan dua orang pelatih pencak silat. Teknik pengumpulan data pada penelitian ini menggunakan teknik delphi. Uji validasi isi menggunakan formula Aiken V dengan bantuan 7 ahli yang terdiri atas 2 ahli kondisi fisik, 2 ahli pencak silat, 1 ahli tumbuh kembang anak, dan 2 pelatih pencak silat. Hasil menunjukkan (1) fleksibilitas menggunakan *sit and rich* memiliki nilai validitas 1, (2) kecepatan menggunakan *sprint* 30 meter memiliki nilai valditas 1, (3) kekuatan menggunakan *push up* memiliki nilai validitas 0.95*, sit up* dengan nilai validitas 1*,* dan *wall sit* memiliki nilai validitas 1, (4) kelincahan menggunakan *shuttle run* memiliki nilai validitas 0.95, dan (5) daya tahan aerobik mengunakan *beep test* memiliki nilai validitas 0.76. Validitas isi keseluruhan instrumen tes yaitu 0.9. dengan demikian dapat disimpulkan baterai tes fisik pencak silat usia dini memiliki validitas isi tinggi. Baterai tes fisik pencak silat usia dini belum teruji reliabilitas dan normanya. Sehingga penting untuk menguji reliabilitas instrumen dan mempersiapkan norma tes fisik pencak silat usia dini pada penelitian selanjutnya.
Kata Kunci: validitas isi, baterai tes, tes fisik, pencak silat

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INTRODUCTION

Pencak silat is a branch of martial arts originating from Indonesia. Pencak Silat itself has various kinds of schools in it. Each college has its characteristics. Pencak silat has a function as a means of physical education which includes health, achievement, and recreation (Mulyana, 2013). Achieving maximum performance requires readiness biomonitor, technical, tactical, and mental components. This is because pencak silat is a sport that requires high speed and good stamina (Subekti et al., 2020). Biomotor components are the basis that must be mastered to achieve maximum performance (Burhanuddin et al., 2021; Sutoro et al., 2023). Flexibility, power, balance, and agility are some of the motor components that influence techniques in pencak silat (Panjiantariksa et al., 2020). So a good training program is needed. planned and measurable to improve the physical abilities of martial artists.

Pencak silat is a competitive sport that requires long-term training programming. Long-term training programs are adapted to age and stage of development. So that the quality of the training program is safe, measurable, and planned. A part from training programs, preparing instruments for evaluation is also necessary in the long-term training process. This is because the quality of training is influenced by evaluation (Bompa & Haff, 2009). Evaluations are often carried out in sports events, training, education, physical activity, and exercise therapy (Sin & Hudayani, 2022). Evaluation is carried out to determine the results of training and competition (Bompa & Carrera, 2015). In scope, evaluation of training results is carried out on coaches and athletes from children, teenagers to adults. In long-term training programs, good evaluation is carried out at each stage of development (Csabai et al., 2024).

Before carrying out an evaluation, an instrument is needed that has validity and reliability (Sumaryanti et al., 2022). Validity and reliability are good instrument standards so that the data obtained is accurate (Adii et al., 2023; Sulistiyono et al., 2022). The instrument gets a validity value after going through several validity testing processes. Content validation is validation that describes the validity of the content of an instrument (He et al., 2024). Content validation is essential to ensure the overall validity of the items (Mitsalina et al., 2021). Several studies have tested the validation of the content of the instrument before it is used in research. Like the previous research, it tested the content validation of the instrument for Low Back Pain (LBP) and tested the content validation of the Enjoyment Instrument in Physical Education Learning (Saputro & Siswantoyo, 2018; Sucipto et al., 2019).

Competition in the sport of Pencak silat is growing rapidly. Athletes train to the maximum because the competition is getting tougher. The government and sports clubs organize long-term training programs to prepare athletes for regeneration so that they always have a reserve of athletes ready to compete to represent the region or country. Long-term development in the sport of pencak silat begins at an early age (10-12 years). This is because early specialization has a positive influence on the future (Fuke et al., 2024). In the long-term development process, instruments are needed to measure the success of the training program provided. Therefore, in the pencak silat sport, instrument development began to be carried out. The pencak silat physical test battery for teenagers and adults has been tested for validity and reliability (Kuswanto, 2016; Nurhidayah & Siswantoyo, 2018). However, until now the instruments for measuring the physical condition of young martial artists have not been validated. This research aims to compile and test the validation of the contents of the physical test instrument for early childhood pencak silat. The instruments prepared are instruments that are adapted to the characteristics of the pencak silat sport, especially at an early age. This is done by referring to the specification principle. It is hoped that the instruments developed can later be used as an evaluation tool in the development of long-term training by coaches and sports practitioners.

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METHODS

This research is quantitative descriptive research with a survey approach. Survey data was collected by discussion using the Delphi method. In contrast to discussions using the Focus Group Discussion (FGD) method which are carried out together, the Delphi method is a discussion carried out indirectly or separately. This means that researchers discuss with each expert separately to get input. Discussions using the Delphi method were carried out in several rounds until a common agreement was reached. This method is used when each expert has limited time and distance to discuss together.

Participants

Testing the content validity of the construction of the early-age pencak silat physical test battery instrument involved 7. The experts involved in developing the instrument were selected based on the areas of expertise required in formulating the construction of the early-age pencak silat physical test instrument. The experts involved in preparing this instrument were two physical condition experts, two pencak silat experts, one child development expert, and two pencak silat trainers. Physical condition experts are included in this research as material experts in the field of physical conditions. Pencak silat experts were included in this study as material experts in the field of Pencak silat. Child development experts were included in the study to adapt the content appropriately to the child's age. Pencak silat trainers were included in this study as users of the instruments developed.

Procedure

The procedure in this research begins with arranging the aims and objectives of the discussion using the Delphi method. After preparing the aims and objectives, the researcher prepared material related to various types of physical test instruments that already existed and were being developed. Researchers also prepared assessment sheets and expert input. After everything is arranged, the material containing the aims and objectives as well as the input sheet is distributed to experts to convey the aims and objectives as the initial stage of the Delphi method process. After that, the researcher received input from each expert. Each expert's input is then analyzed by researchers and a team of analysts. The input results are then processed and grouped according to the physical test component grouping. Next, the researcher redistributes the results of the analysis from the first input to experts. This process is called the first round. This process takes several rounds until the same agreement is reached.

Statistical analysis

The data analysis technique in this research uses the Aiken V formula. Each expert will be given an assessment sheet on the instrument that has been prepared together. The assessment uses four rating scales, 1-4. The results of the cognitive assessment were analyzed using the Aiken v formula. The formula is as follows:

$V = \sum s / [n(c-1)]$
$Vtotal = \sum v / n$
$s = r - lo$
lo = lowest validity assessment number
c = highest validity assessment number
r = number given by the assessor
n = number of experts

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RESULTS AND DISCUSSION

Preparation stage

Instrument development in the early age group of pencak silat sports (10-12 years) needs to be carried out to complement the instruments used for evaluation in long-term training development programs. Bearing in mind that the development of training programs given to early age groups is starting to vary and refers to the biomotor components in pencak silat, such as speed, strength, endurance, and power with loading that is adapted to the child's growth and development r (Coutinho et al., 2024; Sihotang & Novita, 2021; Haromain et al., 2023; Sulfa et al., 2023; Sulfa et al., 2023). This was done because competition in the sport of pencak silat was starting to get tight.

Preparing the construction of a physical test battery for early childhood pencak silat goes through several processes. In the initial stage, discussions were held involving researchers and data analysts. Communication in this discussion was carried out directly to develop the aims and objectives of discussions to develop the construction of physical test instruments for early childhood pencak silat using the Delphi method. Discussion material was obtained from observations in the field regarding the need for physical tests for early childhood pencak silat which showed the need for a physical test battery (Köse et al., 2024). Another consideration is based on the results of previous research which produced a battery test system for youth pencak silat consisting of: sit and reach, 30-meter sprint, 30-second push-up, wall sit test, side step, standing board jump, bleep test, 300-meter sprint (Nurhidayah & Siswantoyo, 2018). The composition of the adult pencak silat physical test battery consists of the side split, 40 40-meter sprints, 30-second push-up, standing triple jump, sit up, back up, shuttle run, bleep test, and 300-meter sprint(Kuswanto, 2016).

Discussion material was also obtained by reviewing theories and research results related to physical conditions at each age. This is done to take into account each individual's differences, such as the growth rate of bones, muscles, organs, and nervous system at each stage of growth(8). Based on the data obtained, it was agreed that six biomotor components need to be tested to measure the physical condition of young martial artists, namely flexibility, speed, strength, agility, power, and endurance. Each component is then given a choice of various suitable instruments to be discussed by the expert. The choice of instrument items that have been prepared based on previous research can be seen in Table 1. This input sheet will be distributed to each expert along with the aims and objectives of preparing the instrument.

Table 1. Biomotor component sheet and types of instruments

No	Biomotor Components	Instrument
1	Flexibility	Sit-and-reach
2	Speed	Sprint 20 m
		Sprint 30 m
		Sprint 40 m
		Sprint 60 m
3	Strength	*Back Dynamometer*
		Leg Dynamometer
		Push Ups
		Back Up
		Wall Sit
		Plank
		Hand grips
		Push and pull
4	Agility	*Hexagon Test*

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		Shuttle runs
		Side steps
5	Power	*Vertical jump*
		Standing board jump
6	Cardiopulmonary endurance	*Cooper test*
		Balke test
		Multistage Fitness test

First round

In the first round, 7 experts received the aims and objectives which were discussed using the Delphi method and instrument selection sheets. After understanding the aims and objectives of the experts, they then select the physical test items on the sheet provided. The results of the experts' choices in the first round can be seen in Table 2.

Table 2. Results of expert choices in the first round

No	**Component**	**A**	**B**	**C**	**D**	**E**	**F**	**G**
1	Flexibility	Sit and Reach	Sit and Reach	Sit and Reach	Sit and Reach	Sit and Reach	Sit and Reach	Sit and Reach
2	Speed	Sprint 20 M	Sprint 30 M	Sprint 30 M	Sprint 20 M	Sprint 600 M	Sprint 60 M	Sprint 30 M
3	Agility	Shuttle Run	Side Steps	Side Steps	Side Steps	Side Steps	Side Steps	Side Steps
4	Muscle Strength	Push ups	Push and pull	Push and pull	Push ups	Push and pull	Push ups	Push ups
		Sit ups	Sit ups	Sit ups	Sit ups	Sit ups	Sit ups	Sit ups
		Wall sits	Wall sits	Leg Dynamometer	Wall sits	Leg Dynamometer	Leg Dynamometer	Wall sits
5	Power	Standing Board Jump	-	-	-	-	-	-
6	Cardiovascular Endurance	Balke test	MFT(Multistage Fitness Test)	MFT(Multistage Fitness Test)	Balke test	MFT(Multistage Fitness Test)	MFT(Multistage Fitness Test)	Balke test

The results of each expert's choice were then analyzed by the researcher and analysis team to prepare an assessment form for the second round. The results of the analysis by researchers and the data analysis team compiled test items for each component according to expert input. The construct of the early-age pencak silat physical test battery in the first round will be used in the second round to test content validity quantitatively. The results of the analysis in the first round can be seen in Table 3.

Table 3. Construction table for the Early Childhood Pencak Silat Physical Test battery

Biomotor Components	Form	Test
Flexibility	Togok	*Sit and rich*
Speed	Run	*Sprint 30 meters*
Agility		*Side steps*
Strength	Arm	*Push ups*
	Stomach	*Sit ups*
	Foot	*Wall sits*
Durability	Aerobics	*Beep test*

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Second round

The second round aims to test the validation of the contents of the instrument structure. The construction of a physical test battery for early childhood pencak silat, the results of the first round, were then distributed to experts for assessment. Assessment is carried out using four assessment scales. The assessment results given by experts on each item of the instrument are processed using the Aiken v formula. The following are the results of calculations using the Aiken v formula:

Table 4. Second round results

Biomotor Components	∑ s	Validity
sit and rich	21	1
30 meter sprint	21	1
push ups	20	0.9524
sit ups	20	0.9524
wall sit	21	1
Side steps	21	1
beep test	16	0.7619

Table 4.1. **Second round results**

Biomotor Components	Expert Assessment Scores							∑ s	Validity
	A	B	C	D	E	F	G		
sit and rich	3	3	3	3	3	3	3	21	1
30 meter sprint	3	3	3	3	3	3	3	21	1
push ups	3	3	3	3	3	2	3	20	0.9524
sit ups	3	3	3	3	3	3	2	20	0.9524
wall sit	3	3	3	3	3	3	3	21	1
Side steps	3	3	3	3	3	3	3	21	1
beep test	2	2	2	2	3	3	2	16	0.7619

Based on the expert assessment, the construction of an early-age pencak silat physical test battery consists of five biomotor components. These components consist of (1) flexibility using sit and rich with a validity value of 1, (2) speed using a 30-meter sprint with a validity value of 1, (3) strength using push-ups with a validity value of 0.95, sit-ups with a validity value of 1, and wall sit with a validity value of 1, (4) agility using side steps with a validity value of 0.95, and (5) aerobic endurance using the beep test with a validity value of 0.76. The overall content validity of the test instrument is 0.95. So it can be stated that this test has been approved by experts or has high content validation.

To obtain athletes who have good performance, talent identification and development are starting to be carried out in the pencak silat sport through government and independent club-based programs (Burhanuddin et al., 2021; Susanto et al., 2023). Athletes who pass the talent identification will be specially trained through a talent development program (Putra et al., 2023). In the development process, the training program provided was adapted to the age group in the pencak silat competition. The age groups in pencak silat competitions consist of early age (10-12 years), pre-adolescents (12-14 years), teenagers (14-17 years), adults (17-35 years), master I (35-45 years), and master II (> 45 years)(Kriswanto, 2015). Training programs tailored to age groups are carried out to adjust physical readiness for each developmental age stage. This is done to reduce the risk of injury and growth restrictions. The training program given to the early age group is game-based, but it is not uncommon for the training program given to focus on motor skills, namely speed, strength, endurance, and power (Coutinho et al., 2024; Sihotang & Novita, 2021; Haromain et al., 2023; Sulfa et al., 2023; Sulfa et al., 2023). To determine the effect of the training program provided, the coach evaluates by measuring

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physical condition with instruments appropriate to the sport (Tayech et al., 2022). So the development of instruments according to sports began to be carried out (Budiarti et al., 2022; Sumaryanti et al., 2022).

Instrument development was carried out through a long procedure, starting with analyzing needs, drafting the instrument with experts, validating and reliability testing, and developing test norms (Adii et al., 2023; Nurhidayah et al., 2023; Senanayake et al., 2023; Tayech et al., 2022). The development of exercises and physical test instruments at the early age/early specialization stage has pros and cons. It is remembered that in the stages of talent development, two principles are believed to be, namely early specialization and advanced specialization. Based on several studies, early specialization has a positive influence on an athlete's future abilities, although the development process allows for boredom (Fuke et al., 2024; Valenzuela-Moss et al., 2024; Zampieri, 2024). For sports that hold early specialization, of course, training and training evaluations are adjusted to developmental age (Charbonnet & Conzelmann, 2024). So in the development process discussions are held with physical condition experts, child growth and development experts, sports branch experts, and coaches (Saputro & Siswantoyo, 2018). Considering that the development of talented athletes in sports is adjusted to the age stages of the competition, researchers in the pencak silat branch have begun to develop instruments according to the age group of the competition (Kuswanto, 2016; Saputro & Siswantoyo, 2018). In this study, researchers completed the development of physical/fitness test instruments for the pencak silat sport, namely the early age group (10-12 years). The development process refers to the Indonesian Physical Fitness Test (TKJI) which starts from the age group (6-9 years) (Dede Pebriandi Sihotang & Novita, 2021).

The construction of physical test instruments for early childhood pencak silat has been arranged which consists of flexibility, 30-meter sprint, push up, sit up, wall sit, side step, and beep test. The construction test instruments are prepared by experts based on the maturity of children or adolescents which can be determined by chronological age, skeletal age, and stage of sexual maturation (Kahlouche & Kessouri, 2024; Shi et al., 2024). Another basis for determining test items is the functional ability specifications and specifications for each sport (Hank et al., 2024; Utama et al., 2022; Yüksel, 2021). Sport branch specifications are the basis for determining instrument construction to suit the characteristics of the sport (He et al., 2024). Because each sport has different dominant energy and movement characteristics (Franchini, 2023). These differences in energy systems will affect the percentage of each motor component needed in each sport (Sulistyowati et al., 2022). For example, in gymnastics, improving physical abilities requires balance, agility, and strength at each age stage (Iswana et al., 2023). In the pencak silat sport, endurance, speed, agility, power, balance, and flexibility are important for a silat fighter (van der Zwaard et al., 2023).

The research results show that the construction of the early-age pencak silat physical test battery has high content validity. High instrument validity shows that the instrument prepared has standards for use in measurement (Adii et al., 2023). So that the data obtained is accurate and can be used in the evaluation process (He et al., 2024) (Huber & Verhoff, 2024). The validation process is divided into several forms: evidence-based on content, evidence-based on the response process, and evidence-based on other variables (Cleland et al., 2024; Mardaphi, 2017; Mineiro et al., 2024; Norris et al., 2024). Several instruments that have content validation can already be used (Chen et al., 2024). However, further validation is needed to obtain evidence from the response process and evidence based on other variable factors (Hammami & Zmijewski, 2024; Molina-Garcia et al., 2022; Morán-Gámez et al., 2024). Apart from that, instrument reliability testing is also needed in compiling measurement instruments (Weber et al., 2024). This is done to determine the regularity of the measurement data (Carius et al., 2024). In testing validity and reliability, accuracy is required (Mitsalina et al., 2021). Therefore, the validity and reliability testing process requires experts and officers who

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understand testing procedures (Iconaru et al., 2024a). This is done to reduce errors in the validity and reliability testing process (Olmez & Yuksek, 2023).

Errors in testing the validity and reliability of instruments in sports are influenced by several factors. The first factor is human resources, weather conditions, field conditions, equipment availability, and implementation management(Iconaru et al., 2024b). Poor field conditions are one of the factors that can bias the measurement results. This is because the test subjects were not able to carry out the test perfectly. After all, there were external disturbances such as field conditions that were not flat and slippery (Orfin & Mazepa, 2022). Apart from that, if validity testing is carried out in an open space, unfriendly weather such as rain or too hot can disrupt the validity testing process (Palevych et al., 2021). Therefore, in the validity testing process, thorough preparation is needed. This preparation includes drawing up a plan in the event of external disturbances that could bias the data.

Future research is expected to be able to test the continued validity and reliability of the construction of the physical test battery for early childhood pencak silat. So this instrument can be used as a measuring tool in evaluating the identification and development of pencak silat athletes. Considering the importance of measuring physical condition tests in the identification and development of talented athletes.

CONCLUSION

Based on the research results above, it can be concluded that the construction of the pencak silat physical test battery has high content validity. This means that experts have the same agreement in assessing the instruments prepared. The limitation of this research is that the physical test battery for early childhood pencak silat has not been tested for reliability and norms. So it is important to test the instrument's reliability and prepare physical test norms for early-age pencak silat in future research.

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