Development of Run-Balance-Swim-Balance (RBS) exercise model in physical education learning to improve physical literacy: a special study on the biak tribe
Desarrollo del modelo de ejercicios de carrera-equilibrio-natación-equilibrio (RBS) en educación física Aprender a mejorar la alfabetización física: un estudio especial sobre la tribu Biak

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Abstract

Introduction: The low level of physical literacy in Papua province needs to be addressed through physical education in schools. Therefore, this study developed an ethnography-based Run-Balance-Swim (RBS) exercise model for the Biak tribe.
Objective: Improving physical literacy of students in Papua through the Run-Balance-Swim (RBS) exercise model.
Methodology: A research and development method were used to produce an ethnographically appropriate training model for the Biak tribe. This study involved 100 elementary school students from the Biak tribe, which were divided into small-scale trial groups (n=30 students) and large-scale trials (n=70 students). Data were collected using expert validation instruments (content validation) and physical literacy observation questionnaire and physical literacy knowledge questionnaire (PLKQ) which were filled in by respondents during pretest and posttest. Data were analyzed using the N-Gain Score test to determine the effectiveness of the Run-Balance-Swim (RBS) training model.
Results: The results of the small-scale trial were 79.09% (good), after revision in the large-scale trial obtained 88.37% (good) with a validity of 0.781. These findings indicate that the application of the exercise model with an ethnographic approach has a high effectiveness in improving the physical literacy of Biak tribe students with an N-Gain Score value of 0.807 (high) and an N-Gain Percent value = 80.73% (effective).
Discussion: The results of this study are similar to previous studies which stated that running, balance training and swimming are effective in improving physical literacy.
Conclusions: It is suggested that the Run-Balance-Swim (RBS) training model can be implemented by Physical education teachers in Papua, as an effort to improve physical literacy.

Keywords

Balance; biak tribe; ethnography; physical literacy; run; swim.

Resumen

Introducción: El bajo nivel de alfabetización física en la provincia de Papúa debe abordarse a través de la educación física en las escuelas. Por lo tanto, este estudio desarrolló un modelo de ejercicio Run-Balance-Swim (RBS) basado en la etnografía para la tribu Biak.
Objetivo: Mejorar la alfabetización física de los estudiantes en Papúa a través del modelo de ejercicios Run-Balance-Swim (RBS).
Metodología: Se utilizó un método de investigación y desarrollo para producir un modelo de entrenamiento etnográficamente apropiado para la tribu Biak. En este estudio participaron 100 alumnos de primaria de la tribu Biak, que se dividieron en grupos de prueba a pequeña escala (n=30 alumnos) y a gran escala (n=70 alumnos). Los datos se recogieron utilizando instrumentos de validación por expertos (validación de contenido) y cuestionario de observación de la alfabetización física y cuestionario de conocimientos de alfabetización física (PLKQ) que fueron rellenados por los encuestados durante el pretest y el postest. Los datos se analizaron mediante la prueba N-Gain Score para determinar la eficacia del modelo de entrenamiento Run-Balance-Swim (RBS).
Resultados: Los resultados del ensayo a pequeña escala fueron del 79,09% (bueno), tras la revisión en el ensayo a gran escala se obtuvo un 88,37% (bueno) con una validez de 0,781. Estos resultados indican que la aplicación del modelo de ejercicio con un enfoque etnográfico tiene una alta eficacia en la mejora de la alfabetización física de los estudiantes de la tribu Biak con un valor N-Gain Score de 0,807 (alto) y un valor N-Gain Percent = 80,73% (eficaz).
Discusión: Los resultados de este estudio son similares a los de estudios anteriores que afirmaban que la carrera, el entrenamiento del equilibrio y la natación son eficaces para mejorar la alfabetización física.
Conclusiones: Se sugiere que el modelo de entrenamiento Correr-Balance-Nadar (RBS) puede ser implementado por los profesores de Educación Física en Papúa, como un esfuerzo para mejorar la alfabetización física.

Palabras clave

Equilibrio; tribu biak; etnografía; alfabetización física; correr; nadar.

Introduction

The concept of physical literacy has long been applied by developed countries through implementation in the field of education, because the essence of physical literacy is to implement it (Nur & Aprilo, 2021). Basically physical literacy is described as generating motivation, confidence, physical competence, knowledge and understanding to participate in running a healthy and active lifestyle (Longmuir et al., 2015). Developed countries such as America and China have implemented physical literacy optimally. This can be seen in the 2020 Olympics, America became the overall champion and China ranked 2nd, preparing it carefully, one of which is by implementing physical literacy in schools. The implementation of physical literacy in all communities in America, whether normal or disabled, both local residents and migrants (Aspen Institute, 2020). In Indonesia, physical literacy has been widely researched, but still dominantly studies the concept (Permana & Habibie, 2020). The government through the National Sports Grand Design (DBON) states that the direction of national sports coaching and development policies is effective, efficient, superior, measurable, systematic, accountable, and sustainable within the scope of educational sports (Perpres, 2021). Meanwhile in Papua no one has studied in depth about ethnography-based physical literacy.

Physical Literacy consists of four domains including daily behaviours, physical competence, motivation and confidence, and knowledge and understanding (Permana & Habibie, 2020). Basically, Physical Literacy is the attributes, characteristics, skills and behaviours related to the capacity to consistently implement a healthy and active lifestyle (Bachtiar et al., 2024). Various studies state that Physical Literacy is an integration of physical, perceptual, cognitive, psychological, and behaviours abilities, which are aligned with the need for an active, healthy, and fulfilling lifestyle, involving ongoing positive interactions with the environment and engagement embodied in lifelong physical activity (Li et al., 2022). The implementation of Physical Literacy from an early age through education has had a major impact on developed countries. The United States, China, Japan and other countries that seriously implement Physical Literacy have superior achievements in the Olympics. Physical literacy is a foundation that can be used in various life activities and in efforts to achieve performance excellence. Individuals with a good level of physical literacy are more likely to be active throughout life and will move confidently and competently (Wibowo et al., 2023).

Based on this, Indonesia must implement Physical Literacy seriously, optimally and planned in schools. Research results reveal that physical literacy in Indonesia has not developed rapidly as in developed countries (Friskawati & Stephani, 2021). Efforts to implement Physical Literacy are certainly inseparable from PJOK teachers at school, therefore PJOK teachers must be aware and understand about Physical Literacy to be able to implement it optimally to students. Basically, building Physical Literacy can lead students to a healthy and active life. Physical Literacy will provide tremendous benefits to students, among others, these include improved physical fitness and ability, attitudes and emotions that motivate students to live an active life, socialisation skills with others, and increased knowledge and understanding of what, why, how, and when students exercise (Fitrianto, 2022). Basically, physical literacy should be viewed as an umbrella concept with a broad scope of learning, knowledge, skills, and values related to responsibility for intentional physical activity and human movement throughout life. Therefore, physical literacy is a construct that is measured in terms of learning in schools (Cairney et al., 2016).

Papua Province, which has aspirations to revive the glory of national sports and wants to declare Papua as a sports province, must try to be optimal in sports development from an early age. Basically, sports are all activities that involve the mind, body, and soul in an integrated and systematic manner in order to support, encourage, foster, and develop physical, spiritual, social, and cultural potential (Asri et al., 2024). One of the indicators that must be achieved is the high level of Physical Literacy of the people in Papua province. However, the facts in the field show that the proportion of physical activity in the population aged ≥10 years in Papua Province is dominant in the sufficient category, namely 66.09% and 33.91% (Mutohir et al., 2023). Riskesdas data also shows the low level of physical activity in Papua. It is further confirmed that the results of research on the level of sports participation in Papua Province are only 27.92% with a physical literacy index of 0.563 or 56.3% (Tim Riskesdas, 2018). In line with the results of previous research which revealed that there was a decrease in physical activity and an increase in the duration of sitting in children also experienced by several countries (Jago et al., 2017). Differences in culture, customs, geographical location and physical environment cause differences in

levels of physical literacy, resulting in different methods for dealing with problems that occur, including physical literacy problems (YongKang & QianQian, 2022).

In Papua, it is known that demographics form a slightly different society between mountainous and coastal areas. The results of previous studies state that there are significant differences in physical anthropometry between residents who inhabit coastal areas and residents who inhabit valley and mountain areas (Ita, 2017). The Biak tribe is one of 250 tribes in the Land of Papua that inhabits a group of islands (Rumansara, 2003). The 'Snap Mor' tradition is a Biak hunting activity, especially catching fish (Ap, 2018). In addition, there are seven cultural elements in Biak tribe, among others: religious system, living equipment, livelihood, language, art, social system (kinship system), knowledge system, which is called 'Wor', especially related to the art of dance (Wattimena, 2017). Currently there is no research that focuses on examining the exercise model to improve students' physical literacy in ethnography-based Papua, specifically the Biak Tribe. Based on this, the researcher is interested in developing an exercise model that refers to the customs, culture, and traditions of the Biak tribe, including the tradition of hunting fishing in the sea (running and swimming), and the culture of dance (balance).

The purpose of the study was to develop a Run-Balance-Swim (RBS) exercise model to improve physical literacy through the Biak customary approach. The study focused on four domains including daily behaviour, physical competence, motivation and confidence, and knowledge and understanding. The approaches used in this research are empirical approach and customary approach. The empirical approach uses primary data sources by obtaining data directly from respondents who are used to determine precisely and accurately the level of physical literacy in Biak students, based on this, an exercise model is designed that is in accordance with Biak culture.

In this study, running was chosen to be developed because running is one of the numbers that includes the mother of all sports (Kardi et al., 2022). In addition, running is needed in every survival activity in the Biak tribe such as hunting. In addition to the ability to run, good balance is also needed, especially in activities such as spearing pigs while running and spearing fish from a boat, as well as the ability to swim because the Biak tribe is located predominantly in the coastal area so swimming is one of the skills that the Biak tribe must have. Swimming is one of the most popular and popular aquatic disciplines, especially for elementary school students (Sectio et al., 2024).

Method

Papua is famous for its traditional areas that are very thick and continue to be preserved. The customary approach is carried out in developing the RBS training model in Physical education sports and health learning in schools. This research is a type of development research (Research and Development) conducted by adapting the steps of development research as follows: (1) needs analysis, (2) observation and theoretical studies, (3) initial product design, (4) product trials (small-scale trials/revisions and large-scale trials/revisions); and (6) final product. The small-scale trial was conducted on 30 students and the large-scale trial was conducted on 70 students. Data collection techniques used questionnaires filled out by students and experts.

This research will develop a Run-Balance-Swim (RBS) training model adapted to the culture of the Biak tribe as an effort to improve physical literacy in Papua. Solving the problem of low levels of physical literacy through culture is a new breakthrough in the field of sports. The selection of the Run-Balance-Swim (RBS) training model is because Biak's geographical location includes coastal areas, so movements such as running, swimming, and balance in movement are important to provide. So, in designing the Run-Balance-Swim (RBS) training model, it is adjusted to the culture of the Biak tribe who likes hunting, dance and music, and swimming.

Participants

The subjects of this study were 100 upper grade elementary school students aged between 9-12 years old (small scale trial: 30 students and large-scale trial: 70 students) who were selected using purposive sampling technique, namely students from Biak tribe. The students have been selected and agreed to be analysed for their physical literacy level and given the Run-Balance-Swim (RBS) exercise model to each elementary school student.

Procedure

The development model used by researchers is a procedural development model. This research uses the Borg and Gall procedural development method (Borg & Gall, 1983). Researchers modified Borg and Gall's R&D development model into 8 steps in developing the RBS exercise model in Physical Education Sports and Health learning to improve physical literacy in Papua, especially in the Biak tribe with the following steps:

1. Needs analysis by collecting information using interview methods, field observations and theoretical studies.

2. Designing initial products (researchers developed the Run-Balance-Swim (RBS) exercise model in Physical Education Sports and Health learning as an effort to improve students' physical literacy).

3. The expert assessment used four experts including; 2 practitioner experts and 2 experts on Papuan ethnography, particularly the Biak Tribe.

4. Conducting small-scale trials involving 30 students.

5. Initial product revision, revision based on expert evaluation and small group trial activities.

6. Large-scale trial activities involving 70 students.

7. Final product revision based on large-scale trial results.

8. Results Development of Run-Balance-Swim (RBS) training model and final product report.

The Run-Balance-Swim (RBS) training model design includes several forms of movement adapted to the habits of the Biak tribe as an effort to improve the physical literacy of Biak tribe students. Basically, the life of the Biak tribe is thick with customs that are still preserved today; therefore, researchers are interested in developing an exercise model based on the habits of the Biak tribe. The exercise model consists of three aspects, namely running, maintaining balance, and swimming. These aspects are adjusted to the dominant needs of the Biak tribe in everyday life. The running training model was developed from the Biak tribe's habit of hunting which requires the ability to run. Balance is needed by the Biak tribe in hunting such as spearing pigs or deer while running, spearing fish from a boat, and others. Swimming is needed by the Biak tribe in catching fish, shrimp, and others in the sea. Through the developed training model, running, balance, and swimming will be described in a simple and structured manner, which will facilitate students in performing and practising the sequences of movements. With the design of a structured and comprehensive training model, it is hoped that Biak students can improve physical literacy and can develop skills towards sports achievement. The following design of the Run-Balance-Swim (RBS) training model has been compiled.

Figure 1. Development Model Design of Run-Balance-Swim (RBS) Training Model
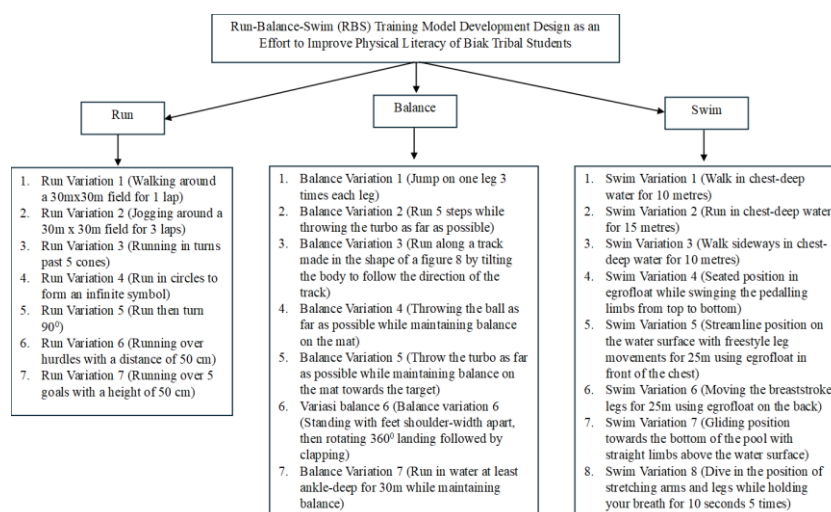
Source: author

Instrument

The data collection instrument used in developing the Run-Balance-Swim (RBS) training model is in the form of a questionnaire as an observation guide for Biak tribe students during small-scale trials and large-scale trials as well as expert validation. The assessment uses a Likert scale with answers very good = 4, good = 3, fair = 2, poor = 1. The instrument is used to obtain data from the results of developing the Run-Balance-Swim (RBS) training model. The instrument is filled in according to the student's ability to carry out each exercise model developed. The assessment instrument for the Run-Balance-Swim (RBS) training model is in table 1.

Table 1. Run-Balance-Swim Training Development Model

No	Training Model	Movement Description	Score			
			4	3	2	1
	Run Training Model					
1	Run Variation 1 (Walk 30m)	The path around a field measuring 30m x 30m diagonally once.				
2	Run Variation 2 (Jogging 30m)	Jogging around a field measuring 30m x 30m three times.				
3	Run Variation 3 (Cones zigzag)	Running past the cones from each side in a zigzag direction.				
4	Run Variation 4 (run infinite shapes)	Running to form the infinity symbol three times.				
5	Run Variation 5 (running turn 90⁰)	Run and then turn 90 degrees three times.				
6	Run Variation 6 (running over the hurdles)	Running and jumping over 5 hurdles with a distance of 3 feet between each hurdle.				
7	Run Variation 7 (Running over obstacles)	Running over obstacles with a distance of 50 cm.				
	Balance Training Model					
8	Balance Variation 1 (one-legged jump)	Jump on one foot three times, then repeat for two sets, alternating between left and right.				
9	Balance Variation 2 (turbo throwing)	Run 5 steps while holding the turbo in your hand, maintaining your balance, then throw the turbo as far as possible, alternating between your left and right hands.				
10	Balance Variation 3 (run the shape of the number 8)	Running along a track shaped like the number 8, leaning the body to follow the direction of the path, is done for 3 laps.				
11	Balance Variation 4 (Throwing the Ball)	Step three times as a start, then throw the ball as far as possible, alternating between your left and right hand.				
12	Balance Variation 5 (throwing the turbo towards the target)	Throwing the turbo as far as possible while maintaining balance on the mat towards the target, alternating between the left and right hand.				
13	Balance Variation 6 (360⁰ rotating jump)	Stand with your feet shoulder-width apart, then spin 360 degrees, landing with a round of applause. Spin 3 times to the right and 3 times to the left.				
14	Balance Variation 7 (running in water)	Running in water at a minimum height above the ankles for a distance of 30 meters while maintaining balance.				
	Swim Training Model					
15	Swim Variation 1 (walking in water)	Walking in water up to my chest for a distance of 10 meters.				
16	Swim Variation 2 (running in the water)	Running in water up to the chest for a distance of 15 meters.				
17	Swim Variation 3 (walking sideways in the water)	Walking sideways in water up to the chest for a distance of 10 meters.				
18	Swim Variation 4 (sitting on egrofloat)	Sitting on the egrofloat while swinging my legs up and down like pedaling to keep my head above the water's surface.				
19	Swim Variation 5 (freestyle with egrofloat)	Streamline position on the water surface with a freestyle kick for a distance of 25m using an egrofloat in front of the chest.				
20	Swim Variation 6 (breaststroke with egrofloat)	Moving the breaststroke legs for 25m using an egrofloat on the back.				
21	Swim Variation 7 (diving feet above the water surface)	The position slides towards the bottom of the pool with the legs above the water's surface.				
22	Swim Variation 8 (Holding your breath)	Diving with arms and legs spread while holding your breath for 10 seconds, repeated 5 times.				

Data collection techniques to assess the level of physical literacy of Biak tribal students before and after the application of the Run-Balance-Swim (RBS) training model using the Physical Literacy Observation for Youth Questionnaire and Physical Literacy Knowledge Questionnaire (PLKQ). The Physical Literacy Observation for Youth Questionnaire measures several student skills including: 1) locomotor skills, including running and jumping; 2) throwing; 3) kicking; 4) balancing (Kriellaars & Robillard, 2022). The Physical Literacy Observation for Youth assessment uses a 0 - 100 scale consisting of four categories as shown in Table 2. While the Physical Literacy Knowledge Questionnaire (PLKQ) consists of 21 statement items with validity (r = 0.338-0.680) and reliability (r = 0.613) (Priadana et al., 2021). Participant data collection was conducted before (pretest) and after (posttest) the application of the Run-Balance-Swim (RBS) exercise model.

Data analysis

Data analysis using the product moment validity test using IBM SPSS Statistics version 29.0 to determine the feasibility of the Run-Balance-Swim (RBS) training model developed. Gain Score test was used to determine the level of effectiveness of the application of the Run-Balance-Swim (RBS) training model on respondents based on pretest and posttest scores.

Results

The design of the training model developed has been validated by experts through content validation and through empirical validation with direct application of the Run-Balance-Swim (RBS) training model to Biak tribal students. The experts selected to validate the Run-Balance-Swim (RBS) training model are competent in their fields and possess knowledge both academically and in the sciences of athletics, swimming, and the ethnography of the Biak tribe. There are two experts from the athletics branch, two experts from the swimming branch, and two experts in the ethnography of the Biak tribe. Each expert provided analysis and comments on the theory and practice of the developed training model. The results of the expert validation are presented in the following table 2.

Table 2. Expert Validation Results (expert judgment)

No	The exercise model developed	Retrieved from	Score
	Run Exercise Model		
1	Run Variation 1 (walk 30m)	Valid	0.772
2	Run Variation 2 (jogging 30m)	Valid	0.813
3	Run Variation 3 (cones zigzag)	Valid	0.804
4	Run Variation 4 (run infinite shapes)	Valid	0.882
5	Run Variation 5 (running turn 90^0)	Valid	0.793
6	Run Variation 6 (running over the hurdles)	Valid	0.807
7	Run Variation 7 (running over obstacles)	Valid	0.803
	Balance Exercise Model		
8	Balance Variation 1 (one-legged jump)	Valid	0.682
9	Balance Variation 2 (turbo throwing)	Valid	0.802
10	Balance Variation 3 (run the shape of the number 8)	Valid	0.784
11	Balance Variation 4 (throwing the Ball)	Valid	0.805
12	Balance Variation 5 (throwing the turbo towards the target)	Valid	0.814
13	Balance Variation 6 (360^0 rotating jump)	Valid	0.653
14	Balance Variation 7 (running in water)	Valid	0.754
	Swim Exercise Model		
15	Swim Variation 1 (walking in water)	Valid	0.792
16	Swim Variation 2 (running in the water)	Valid	0.801
17	Swim Variation 3 (walking sideways in the water)	Not Valid	0.261
18	Swim Variation 4 (sitting on egrofloat)	Valid	0.704
19	Swim Variation 5 (freestyle with egrofloat)	Valid	0.801
20	Swim Variation 6 (breaststroke with egrofloat)	Valid	0.802
21	Swim Variation 7 (diving feet above the water surface)	Valid	0.823
22	Swim Variation 8 (holding your breath)	Valid	0.714
	Average before elimination of invalid training model		0.758
	Average after elimination of invalid training model		0.781

Based on the results of expert validation, it was found that there was one invalid training model. Therefore, the invalid training model will be eliminated and continued with the small-scale trial. Swimming variation 3, which is walking sideways in the water, is invalid because it does not match the dominant movements required by the Biak tribe in their daily lives. Based on the results of data analysis, the highest score obtained was 0.882, the lowest score was 0.261, with an average of 0.758. After eliminating invalid training models, 21 valid training models were obtained (Run training model = 7 variations of training models; Balance training model = 7 variations of training models; and Swim training model = variations of training models). The results of the content validity test showed the highest value of 0.882, the lowest value of 0.653, with an average of 0.781. Based on the content validation test, the results show that the Run-Balance-Swim (RBS) training model is suitable for implementation. The small-scale trial was conducted on 30 participants, namely Biak tribe students with the results shown in table 3.

Table 3. Results of Small-Scale Testing

Valid question items	Sample	Score Results	Maximum Score	%
1-21	30	1993	2520	79.09

Based on the results of the small-scale trial, it was found that 79.08% fall into the good category. Thus, further testing can be conducted by making several improvements, namely: 1) adjusting the level of difficulty by adding or reducing the complexity of movements in the exercise variations; 2) simplifying the instructions so that the training becomes more efficient and effective. After the revisions, a large-scale trial will be conducted. The large-scale trial was conducted on 70 participants, namely Biak tribe students with the results shown in table 4.

Table 4. Results of Small-Scale Testing

Valid question items	Sample	Score Results	Maximum Score	%
1-21	70	5196	5880	88.37

Based on the results of the large-scale trial, it was found that 88.37% fall into the good category. Thus, the Run-Balance-Swim (RBS) training model can be applied to the students of the Biak tribe as a training model that aligns with the customs and daily habits of the Biak people. The results of the effectiveness test of the Run-Balance-Swim (RBS) training model were conducted by comparing the pretest and post-test results using the N-Gain Score test.

Table 5. N-Gain Score and N-Gain Percentage Results

	N	Min	Max	Mean
NGain_Score	100	.50	1.00	.8073
NGain_Persen	100	50.00	100.00	80.7333
Valid N (listwise)	100			

Based on the results of the N-Gain test, a mean value of 0.807 was obtained with the assumption that the N-Gain value > 0.7, placing it in the high category. Furthermore, the mean percentage of N-Gain was 80.73%, which can be interpreted that the Run-Balance-Swim training method is effective in improving the physical literacy of Biak tribe student.

Discussion

The research on the development of the Run-Balance-Swim training model shows positive results in improving the physical literacy of Biak tribe students. The scenarios in the training model were designed to align with the customs and traditions of the Biak tribe, which made the students enthusiastic about participating in each training sequence. Similar research reveals that the implementation of Run Jump Throw Wheel can enhance students' physical literacy (Coyne et al., 2019). This research focuses on studies in schools, particularly among Biak ethnic students, because fundamentally, schools are the right place to develop children's potential, including physical literacy. It is echoed that schools play a crucial role in enhancing students' physical activity (Hollis et al., 2017). Previous research has revealed that running programs have a positive and effective impact on the development of physical literacy (Anico et al., 2023). Therefore, physical literacy is important to teach from an early age. It is further explained that children's physical literacy will continue to develop into adulthood (Jones et al., 2020). Similar research has also revealed that physical literacy is a construct that emerges in the improvement of children's health, which can influence their lifelong physical activity habits (Belanger et al., 2018).

Running is an important part of this research because, essentially, running is one of the exercises that can enhance physical literacy. In addition, running among the Biak tribe is a dominant physical activity performed during hunting and survival. Thus, running skills in various activities such as running while jumping, running while carrying a spear, running while changing direction, and running while throwing at a target. Previous research revealed the virtues of running training in primary school students, namely: Basic Motor Development includes improving coordination of body movements, strengthening the main muscles of the body, developing dynamic balance, and exercising control of body movements (Whitehead, 2019). Running is also able to increase aerobic capacity, strengthen the heart and lungs,

improve blood circulation, and increase endurance (Robinson et al., 2015). Running helps cognitive development (Stodden et al., 2008). In addition, running can also increase self-confidence (Lloyd & Oliver, 2012).

Balance is one of the aspects developed in this research because, fundamentally, the physical activities performed by students require balance to support other skills such as running, throwing, changing direction, and jumping. Previous research has revealed that regularly training balance has a positive impact on speed, agility, and balance performance (Acar & Eler, 2019). The development of balance is important for Biak tribe students, as it helps their families in daily life to catch fish in the sea, lakes, or rivers. Spearing fish from a moving boat requires an optimal level of balance to aim accurately. Research reveals that exercises to improve children's balance are essential, especially in schools (Polevoy, 2020). Balance is the foundation of all movement and is essential in performing motor skills (Acar & Eler, 2019). It is further explained that physical literacy educates students to adapt to a changing environment, which requires the ability to maintain balance in movement (Basoglu, 2018). In swimming or physical activities in water, balance is needed to stabilize movement and distribute body weight (Dudley, 2019). In addition, balance training can improve the Sensorimotor System and increase movement efficiency and postural stability (Rudd et al., 2020). Balance training improves Neuromuscular Control (Cairney et al., 2019). Optimizes safe movement patterns (Robinson et al., 2015). In addition, balance training can improve concentration, focus, and improve body control in various positions (Lubans et al., 2010).

Swimming has become one of the crucial skills for students, especially for the Biak ethnic group, who have a cultural background and customs closely related to the sea. Swimming has a positive impact on maintaining and improving health and components of physical fitness (Strašilová et al., 2020). The research results show that students who regularly practice swimming are able to develop aspects of balance, coordination, and strength (Roj et al., 2016). It is further explained that swimming and moving in water can be a lifelong physical activity (Strašilová et al., 2020). Based on that, the right choice to start swimming lessons for elementary school students. Therefore, the development of the Run-Balance-Swim (RBS) training model is tailored to the habits and customs of the Biak tribe, which in its implementation is capable of enhancing physical literacy. In addition, swimming activities are easily accessible to students because most of them live near the beach. Swimming training can develop water balance skills and strengthen fine and gross motor control (Light & Wallian, 2008). It increases self-efficacy in water activities and promotes independence in movement (Whitehead, 2010). In addition, balance training improves cardiovascular fitness, strengthens muscles overall, and increases flexibility and endurance (Pan, 2010). The research results emphasize that swimming-based interventions not only enhance motor skills in water but also transfer the improvement of movement skills on land (Pratt et al., 2024).

Conclusions

This research focuses on the development of the Run-Balance-Swim training model to enhance the physical literacy of students through an ethnographic approach to the Biak tribe. The results of the study produced 21 valid training models were obtained (Run = 7 variations of training models; Balance = 7 variations of training models; and Swim = 7 variations of training models). The exercise model was developed in accordance with the customs (ethnography) of the Biak tribe. Based on the results developed, the Run-Balance-Swim training model is effective in improving the physical literacy of Biak students. In addition, in the implementation of the exercise model, it is recommended to: 1) In the implementation of the training model, effective classroom management is expected, which includes managing students' turns, supervising security, and ensuring that each student gets adequate attention; 2) Adequate facilities and resources, including the availability of kids athletics equipment, a large enough swimming pool, supporting equipment, and accompanying assistants; 3) The need for effective and efficient assessment methods to measure the improvement and development of the implementation of the Run-Balance-Swim training model. This study provides empirical evidence that the ethnographic approach is effective and has a positive impact in improving the physical literacy of Biak students. Based on these findings, the researcher recommends further research on other tribes in Papua to promote physical literacy on a massive and comprehensive scale.

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