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DINA: Development Model Physical Activity of Dance Intensive Nimble Physical Activity for Children Aged 9-10 Years

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Keywords

physical activity, dance, children aged 9-10 years

Abstract

Physical activity is vital for children to improve their motor skills and overall fitness. This study aimed to develop the Dance Intensive Nimble Activity (DINA), a physical activity model combining trending TikTok dances with short, high-intensity mini-games. The ADDIE model (Analyze, Design, Develop, Implement, Evaluate) guided the development. The study involved 68 children aged 9-10 years across Central Java and Yogyakarta schools, with data collected through observations, questionnaires, and documentation. Expert validation rated DINA as "Very Valid" (mean score 3.76/4), while children's responses showed high enthusiasm (mean score 3.60/4). DINA was easy to follow, engaging, and beneficial in enhancing motor skills, fitness, and cognitive function. The combination of fun music, simple moves, and ice-breaking elements made DINA enjoyable for children, promoting positive feelings and motivation. In conclusion, DINA is an effective and practical alternative physical activity model for children aged 9-10.

INTRODUCTION

The World Health Organization (WHO) has been working on the dissemination of physical activity to reduce sedentary behaviour since 2010 in the form of the GDG (Guideline Development Group) which is used as a handbook for guideline development of physical activity. Physical activity is important for all ages where it can be active play and recreation for children, can be a tool to be more active and reduce sedentary behaviour at work for adults, and improve physical, mental, social health and lifelong wellbeing (WHO, 2018). Physical activity should be provided early in life, especially during childhood and adolescence, as low fitness levels in adulthood are associated with several chronic diseases (García-hermoso et al., 2022). A total of 204,171 participants from 31 countries, overall physical activity has a positive impact on physical health (Carson et al., 2017)

Physical activity needs to be done from an early age so that it helps basic motor skills (fundamentall movement skills) to help the development of physical activity in the next phase (Utoyo et al., 2020). According to Galle et al., (2023),) it is said that providing physical activity of about 35% of daily activity showed significant improvements in aerobic activity, walking speed, verbal memory, executive function, and global cognition compared to those who did not achieve an increase of 35%. In the childhood phase, individuals tend to get tired more easily if they do not do physical activities than those who do physical activities such as running, jumping hitting a ball, jumping rope, or other activities (Mariyanti & Rezania, 2021). Usually, the childhood phase is at the primary school education level, which means that children get opportunities at school to move through physical education.

The implementation of physical activity can not only be done in physical education subjects but can be done in all subjects. This has been done in the American curriculum system, Physical Activity Across the Curriculum (PAAC). PAAC is conducted in the classroom during the first 3 years of school and was developed to increase children's MVPA (Szabo-Reed et al., 2020)ages 6–11 yrs., meet current physical activity (PA. This is in line with one of the survey results, it is said that 87.2% of parents agree to provide physical activity for children before learning and the impact of providing ice breaking activities involving physical activity for children has an impact on optimal kinesthetic intelligence development (Maryani & Weshtis, 2021).

In addition, according to physical education teachers, students prefer ice breaking games that involve physical activity with a percentage of 100%. Around 80.4%, most of the students are more excited after doing physical activity in physical education learning, it is in line with the benefits of physical activity by increasing the mood or feelings of students while learning.

The developmental phase of children occurs between the ages of 6 to 12 years, which is referred to as the "golden period of motor development" (Glapa et al., 2018). At the age of 9-10 years is the transition of simple to complex motor development in childhood. This, of course, needs to be supported through physical activities that can improve the complex motor development and physical fitness of children. Based on book Ayo Bergerak! Kementrian Kesehatan Indonesia (2017) it is said that good physical activity is physical activity that 1) can be seen the results, 2) can be felt the difference, 3) can be enjoyed the process, 4) can be repeated at another opportunity.

There are various types of physical activity recommendations including aerobic activities, muscle strengthening activities, bone strengthening activities, balance activities, and multi-component physical activities (Fulton, 2022). Activities that are easy to do anywhere are aerobic activities, for example, aerobic dance training. Dance aerobics can help lose weight in children who are overweight in children aged 10 and 11 years (Kugara, 2024) and can help postural balance that supports daily activities in children aged 9-11 years (Jouira et al., 2024).

Dance became a popular physical activity option during the Covid-19 pandemic due to the quarantine system, social distancing, and decreased physical activity levels (Tao et al., 2021). During the Covid-19 pandemic phase, the widespread use of a social media application called Tiktok, which was released in 2017, which shows short videos. Dance challenges have become one of the popular content on Tiktok using song snippets (Klug, 2020). The positive impact of Tiktok dance challenges on elementary school children is that children will be more creative and imaginative so that self- confidence arises. Based on the findings Ratri et al (2024) factors that influence elementary school children to like dance challenges because, the videos are fun and become entertainment after school. Dance Tiktok can be used as an alternative for children to do physical activity because the movements are simple, cheerful, and expressive (Juwariyah et al., 2022).

Based on the above, the researcher developed a physical activity called DANCE INTENSIVE NIMBLE ACTIVITY (DINA) is a dance that collaborates between trending dances on TikTok by

combining mini games that are done in a short time with high intensity of movement and utilising small space. This dance can be developed with songs and movements that are trending on TikTok or other platforms. Dance can be combined with mini games in the form of ice breaking such as shouting, clapping, singing, games and so on (Ghasyiyah et al., 2024) and according to Sunarto, it can be done spontaneously to attract attention and focus (Pratiwi satriani et al., 2018).

This physical activity is beneficial for: 1) Increasing pulse rate; 2) Improve psychomotor movement skills (locomotor, non-locomotor, and manipulative); 3) Improve fitness; 4) Improve cognitive abilities. It is hoped that the DINA (DANCE INTENSIVE NIMBLE ACTIVITY) physical activity programme will become one of the options for a variety of physical activities that can be used with students and children aged 9-10 years.

METHOD

This research uses the Research and Development (RnD) method. This research uses 5 steps of implementation using the ADDIE research model (Analysis, design, Development, Implementation, and Evaluation). The ADDIE model uses input, process and output analysis is the input for system design, development and evaluation is the process and implementation is the output (Mesra, 2023).

The research was conducted in schools spread across Central Java-DIY, namely SD LabSchool UNNES, SDN Gedanganak 02, SDN Pujokusuman 1 Yogyakarta, and SDN Salatiga 03. The research subjects were children aged 9-10 years as many as 68 children, with a research focus on the development of a physical activity model and the effectiveness of the Dance Intensive Nimble Activity (DINA) model. Data were collected through observation, pre-research data questionnaires, questionnaires, and documentation which were then analysed to evaluate the feasibility and effectiveness of the DINA model in increasing physical activity in children aged 9-10 years.

Data analysis was carried out using quantitative descriptive analysis using SPSS Statistics 25. Each quantitative data obtained from expert validation sheets and 9-10 year old children's quiz sheets were calculated using the mean formula. The data results are converted using a scale of achievement levels so that they can be presented as skinative data.

The DINA (Dance Intensive Nimble Activity) development model was developed in accordance with the design of the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). First, the analysis stage was carried out by distributing preliminary research questionnaires about the problems and needs of physical activity for children aged 9-10 years in the Central Java region. Second, after the analysis, the researcher made a physical activity development model design and determined product specifications and research design. Third, researchers developed a physical activity development model product (DINA) which was then validated by experts. Fourth, researchers conducted product trials of physical activity development models to respondents. Fifth, the results of the trial were evaluated to obtain the results of the product development of the Physical Activity Development Model named Dance Intensive Nimble Activity (DINA).

RESULT AND DISCUSION

Result

Physical Activity Expert Validation

Based on the assessment of physical activity experts from 3 aspects, a total sum of 7.53 was obtained with an average of 3.77. The results of the assessment by physical activity experts can be seen in table 1.

Table 1. Physical Activity Expert Validation of Dance Intensive Nimble Activity

Statement	N	Sum	Mean		Category
			Mean	Std. Error	
X1.1	2	8	4.00	.000	Very Valid
X1.2	2	7	3.50	.500	Very Valid
X1.3	2	7	3.50	.500	Very Valid

X1.4	2	7	3.50	.500	Very Valid
Concept Correctness	2	7.25	36.25	.37500	Very Valid
X2.1	2	8	4.00	.000	Very Valid
X2.2	2	8	4.00	.000	Very Valid
X2.3	2	8	4.00	.000	Very Valid
Implementation	2	8.00	40.00	.00000	Very Valid
X3.1	2	7	3.50	.500	Very Valid
X3.2	2	8	4.00	.000	Very Valid
X3.3	2	7	3.50	.500	Very Valid
Design	2	7.33	36.67	.33333	Very Valid
Total Average	2	7.53	37.63	.23611	Very Valid
Valid N (listwise)	2				

This data was taken from two experts (N = 2) who provided an assessment of each statement. The assessment was conducted based on three main aspects, (1) Conceptual Correctness, (2) Implementation, and (3) Design, with two experts providing the evaluation. Overall, this activity received a total average score of 3.76 on a scale of 4, indicating that this activity was good enough. In the implementation aspect, this activity received a perfect score with an average of 4.00, indicating that the implementation was very clear and as expected. For the concept correctness aspect, the average score was 3.63, while the design aspect had an average score of 3.67. Statements X1.2, X1.3, and X1.4 in the concept aspect and X3.1 and X3.3 in the design aspect, which scored 3.50, showed quite good results. The validation results from 2 physical activity experts showed the category "Very Valid" on all statements.

Children's Response to Physical Activity

Children's responses to DINA physical activity were obtained through a questionnaire using a Likert scale with a scale between 1-4. The results of children's responses to physical activity are presented in table 2.

Statement	N	Sum	Mean		Category
	Statistic	Statistic	Statistic	Std. Error	
I like DINA activities	68	251	3.69	.056	Very Valid
I want to do DINA physical activity every day	68	254	3.74	.062	Very Valid
I like songs in physical activities DINA	68	234	3.44	.074	Very Valid
View	68	246.33	362.25	.045746	Very Valid
I find DINA activities easy to do	68	255	3.75	.064	Very Valid
I feel stronger after doing DINA activities	68	245	3.60	.076	Very Valid
Usage	68	250.0	36.76	.06087	Very Valid
I feel happy after doing DINA activities	68	232	3.41	.092	Very Valid
I feel more energised after doing DINA activities	68	239	3.51	.082	Very Valid
I sweat after doing physical activity DINA	68	246	3.62	.066	Very Valid
Benefits	68	239.00	351.47	.062245	Very Valid

Total Average	68	245.11	36.046	.04600	Very Valid
Valid N (listwise)	68				

The results of the Dance Intensive Nimble Activity (DINA) physical activity trial showed that most participants felt positive about various aspects of the activity. Overall, the average score for each statement was quite good, with a total average of 3.60 on a scale of 4 with 68 respondents aged 9-10 years. Each statement from the aspects of appearance, use, and benefits received a "Very Valid" category rating.

The statement that children aged 9-10 years have a tendency to like DINA activities has an average of 3.69 and feel interested in doing it every day with an average of 3.74 and the respondents like songs in the activity with an average of 3.44. From the aspect of appearance, this activity is considered quite attractive with a mean of 3.62, and most participants feel this activity is easy to do with a mean of 3.75 and provides positive effects such as feeling stronger with a mean of 3.60 and respondents sweat after doing it with a mean of 3.62.

Respondents felt happy after doing the DINA physical activity with a mean of 3.41 and felt energised with a mean of 3.51 after the activity could still be improved to increase participants' enjoyment and motivation. The benefit aspect was also quite good with a mean of 3.51, indicating that participants felt the positive effects of this activity. Overall, the DINA physical activity trial was found to be effective and well received by the 9-10 year old respondents.

Discussion

Based on the results of the development of a physical activity model using the ADDIE development model, a Dance Intensive Nimble Activity (DINA) physical activity for children aged 9- 10 years was produced. The resulting development product has gone through 5 stages including feasibility testing or validation by 2 physical activity experts and product trials to respondents, namely, children aged 9-10 years. The following are the results of the final product of the Dance Intensive Nimble Activity (DINA) Physical Activity Development Model.

Based on the results of the feasibility test of the physical activity development model by physical activity experts, the DINA physical activity development model received "Very Good" criteria. DINA physical activity is a physical activity that is easy to do and provides a movement experience that is suitable for children aged 9-10 years. DINA physical activities in the form of dance are cost-effective, equipment-free, and easy to do at home or in indoor spaces (Schroeder et al., 2017). Therefore, the physical activity model can be used as an alternative physical activity for children aged 9-10 years. In 2013, school physical activity programmes that are recommended to be carried out in schools include, quality physical education, physical activity before, during and after school activities (Mavilidi & Vazou, 2021)9-11 years old.

Overall, DINA physical activities are favoured by children aged 9-10 years because they are easy to do and have positive benefits. This is proven by the children's enthusiasm to repeat the physical activity again because they like the songs used in DINA physical activities which have a cheerful and fun nuance and the movements chosen are not difficult for 9-10 year old children to follow. In addition, children were happy when asked to imitate the movements or sounds of animals during the quiz. Providing a fun or entertaining experience in physical activity will make children enjoy the experience (Budzynski-seymour & Jones, 2023). In line with this, Dance Tiktok can be used as an alternative for children to do physical activity because the movements are simple, cheerful, and expressive (Juwariyah et al., 2022). Overall, both from expert validation and participant trial results, this physical activity is considered good enough and suitable for use.

CONCLUSION

The Dance Intensive Nimble Activity (DINA) physical activity model for children aged 9-10 years has been developed using the ADDIE model and validated by experts and tested on respondents. The results show that this physical activity falls into the "Very Good" category, is easy to do, cost-effective, and in accordance with the movement needs of children aged 9-10 years. In addition, the activity is favoured by children because it combines simple movements with upbeat songs, which encourages enthusiasm and repetition of the activity. Thus, DINA is an alternative physical activity that is feasible to use at home and at school. Further development can be done by expanding the variety of movements

and songs to increase the appeal of DINA activities. In addition, integration of this model in school physical education programmes or children's daily physical activities can help improve physical fitness effectively. Technology applications, such as digital-based video tutorials, can also be used to support the implementation of DINA in various environments.

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