

20-Minute Rhythmic Gymnastics Program: It's Impact on Gross Motor Skills, Learning Motivation, and Positive Attitudes toward PJOK among Elementary School Students

Wang Yuer^{1*}, Heryanto Nur Muhammad², Mochamad Ridwan³

¹⁻³Faculty of Sports and Health Sciences, Universitas Negeri Surabaya, Indonesia

*Corresponding Author: Wang Yuer, Email: 25060805046@mhs.unesa.ac.id

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ABSTRACT:

Background: PJOK elementary school is supposed to cultivate movement competence, motivation, and positive attitudes towards active living, but in traditional elementary school lessons, command-style repetition is often favoured over developmentally appropriate fun. This is because a 20-minute rhythmic gymnastics programme can be pedagogically appealing by incorporating locomotor, non-locomotor, balance, and expressive movement with music in a limited format that can fit into crowded school schedules.

Purpose: The aim of the manuscript was to assess the impact of a 20-minute rhythmic gymnastics programme on the gross motor skills, PJOK learning motivation, and attitudes towards PJOK among elementary-school students in Grade V.

Techniques: A quasi-experimental pre-test-posttest control-group design involved 56 students who were placed in intact class teachers in an intervention or conventional PJOK condition. Gross motor performance, learning motivation, and PJOK attitude were the outcomes, and qualitative learner reflections were thematically analysed. Paired and independent t-tests, MANCOVA, multivariate effect sizes, and exploratory mediation were performed using quantitative analysis.

Findings: The intervention group exhibited larger adjusted gains in gross motor skills, motivation, and attitude than the control group. The gross motor skills showing the strongest effect were attitude, with a lesser effect. Multivariate testing reported a significant interaction of an intervention, and mediation analysis indicated that better perceived competence was a partial account of motivational gains. Thematic analysis produced three themes: music-supported fun, apparent movement confidence, and social engagement without too much competition.

Conclusion: The evidence substantiates 20 minutes of rhythmical

COPYRIGHT STATEMENT: Copyright: © 2026 Authors. Open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).	gymnastics as a multidimensional PJOK innovation. Nevertheless, this should be interpreted cautiously since the limited duration of exposure (class-level allocation) and lack of long-term follow-up undermine strong causal and policy statements. Keywords: PJOK, physical education, rhythmic gymnastics, gross motor skills, learning motivation, attitudes, elementary school, thematic analysis, MANOVA.
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Introduction

Physical education, sports, and health education (PJOK) take a unique position in elementary schooling because they have the capacity to build motor skills, psychological interest, social inclusion, and health habits in the same lesson. There is international evidence to sound a caution that the lack of physical activity is an endemic problem in children and adolescents; thus, school-based activity is not only recreational but also developmental and preventive [1,2]. In the case of an elementary student, the problem is more acute: the time to consolidate the basic patterns of movement is less, and a low level of movement competence can decrease self-confidence and subsequent engagement in physical activity [3-6].

Gross motor skills are thought to be locomotor, object control, and stability; however, in reality, they are social and motivational. A child who lacks the ability to adjust to jumping, balancing, turning, and playing with rhythm might not just do worse; the child may avoid activities, be open to being observed by other children, and slowly form a negative perception of PJOK. Reviews indicate that structured activity has the potential to enhance motor competence, but the most effective interventions tend to be progressive, diverse, and developmentally relevant, as opposed to interventions that are based on repeated exercises only [3,6-8]. This is significant for Indonesian elementary schools, where time and facilities are scarce, and classes are large in size, and there may be little time to maintain lengthy programs or those that require substantial equipment.

There is the second layer of motivation. The theory of self-determination states that students are more active in activities that promote competence, autonomy, and relatedness [9,10]. This implies that in PJOK, students should be able to feel competent, have a feeling of choice or expression, and be socially secure. Research on the motivation of physical education reveals that perceived competence and autonomous motivation determine the intention to stay physically active [11-14]. Nevertheless, motivation may be undermined in situations where lessons encourage too much performance comparison, rely on the same old routine, and implicitly favour already-competent pupils.

Additionally, attitude toward PJOK is not a minor affective outcome. Positive attitudes may reinforce dynamic habits outside of school, while negative attitudes may make PJOK an obligatory course that students are forced to attend instead of appreciating it [15-17]. The dilemma is thus integrative: an intervention which raises motor scores only but neglects to enhance the emotional meaning of movement is a useless intervention. The future of rhythmic gymnastics is bright because rhythm and music enable organisation and fun, sequences provide an opportunity to practice progressive movements, and group performance can decrease the prevalence of competitive forms of sports. The current literature tends to investigate motor outcomes only or explain rhythmic activity as the commonly used enrichment; however, there is little information on the effect of rhythmic activity on motor, motivational, and attitudinal relationships in parallel. The current study fills this gap by discussing whether a relatively short 20-minute rhythmic gymnastics

program can achieve multidimensional PJOK outcomes without being impractical for elementary school participants.

The school setting is also important. It is not that a short rhythmic routine is of value; it is that it must be time-rich and pedagogically rich. In most elementary schools, transitions, safety instructions, equipment distribution, and teacher management are reduced sources of PJOK time. Activities involving minimal apparatus and are repeatable with progressive variation may then safeguard active learning time in comparison to unit organisations that make high equipment investment. Rhythmic gymnastics might consist of stepping, jumping, balancing, turning, and coordination on the arm and leg in one constant movement so that the pupils would have a chance to train a number of basic movement elements but would not need to stand in a queue or be pushed out of the game. This is especially important for less confident pupils, as the routine could be modified by altering the tempo and range of movement or difficulty instead of taking pupils out of the workout. Physiologically-literacy wise, the worth of the programme is in the ability to interrelate competence, confidence, motivation, and meaningful involvement as opposed to understanding movement skill as a narrow technical score [20-22].

Methods

Design and participants. It employed a quasi-experimental pretest-posttest control-group design based on Grade V students in an elementary school PJOK environment. The intact class was used to assign 56 pupils into an intervention group ($n=28$) and a control group ($n=28$) as the proposed class size. The intervention group underwent a rhythmic spectrum gymnastics programme of 20 minutes whereas the control group performed traditional PJOK activities. The two groups were equally exposed to eight sessions, and assessments were performed pre- and post-program.

Intervention. The sessions were divided into three parts, each lasting 20 min: 4 min of warm-up mobility, 12 min of main rhythmic

sequences, and 4 min of cool-down and reflection. This was the primary phase, which combined marching, side steps, jumps, turns, balance poses, arm-leg coordination, and simple expressive movement. Music was chosen based on its age-appropriate and middle-ground tempos. The game was designed to not include elimination or high-stakes competition, so that pupils who were not skilled might not be afraid of playing socially.

Measures. Gross motor skills were rated using a 0-100 rubric that included locomotor, non-locomotor/balance, and coordination pointers. Learning motivation and PJOK attitude were assessed using 5-point Likert scales which were converted into a 0-100 rating. The motivation scale indicated enjoyment, effort, perceived competency, and willingness to participate. The attitude scale included a measure of the perceived value of PJOK, affective reaction to lessons, and whether the respondents were going to remain active. Brief learner thoughts were taken at the end of the final session to understand how the pupils interpreted the experience.

Data analysis. Changes and baseline comparability were analysed using descriptive statistical analysis. Within-group changes were evaluated using paired t-tests, and gain scores were compared using independent t-tests. MANCOVA was used to compare the adjusted effects of the intervention on the three post-test results, adjusting them to the matching pretest scores. The effect sizes were indicated in terms of Cohen's d , partial eta-squared, and Wilks lambda. The family wise error was controlled using the Holm correction. Exploratory mediation was used to investigate whether perceived competence post-intervention could be used to explain the relationship between the intervention and motivation. Reflexive thematic analysis was used to analyse the learner reflections: familiarisation, open coding, candidate theme development, review against the dataset, naming, and critical interpretation [18,19].

Analytical interpretation emphasised both educational importance and statistical significance. Therefore, consistency in baseline comparability, within-group change, between-group gain, adjusted multivariate tests, and learner reflections were addressed by the analysis. This minimised the chances of relying on p-values to draw conclusions.

Results

The comparability of the baseline data was satisfactory. The age distributions and initial scores were similar between the intervention and control groups, with small, non-significant differences in all baselines. This is important since it is even easier to interpret differences between the post-test when both classes begin at similar levels of motor and motivational structure, although the allocation of classes at the level of the class will never completely remove selection bias.

Table 1. Baseline comparability of the outcome variables.

Variable	Intervention pretest Mean (SD)	Control pretest Mean (SD)	P value
Gross motor skills	61.4 (7.9)	60.8 (8.1)	0.78
Learning motivation	63.2 (8.5)	62.7 (8.2)	0.82
PJOK attitude	64.1 (7.6)	63.5 (7.8)	0.76

The post-test scores were higher in both groups, although the intervention group recorded significantly higher gains. The gross motor skills increased by 14.8 points in the intervention group and 4.3 points in the control group. The increase in motivation was 12.6 points compared to 3.9 points, and PJOK attitude was 9.8 points compared to 2.8 points. This trend indicates that rhythmic gymnastics might be particularly effective in terms of visible movement competence, whereas attitudes might have to be exposed to become more stable.

Table 2. Pre-post gains and between-group effect sizes.

Outcome	Intervention gain Mean (SD)	Control gain Mean (SD)	Between-group p	Cohen's d
Gross motor skills	+14.8 (6.2)	+4.3 (5.8)	<0.001	1.75
Learning motivation	+12.6 (7.1)	+3.9 (6.4)	<0.001	1.29
PJOK attitude	+9.8 (6.8)	+2.8 (6.0)	<0.001	1.09

The same results were supported by advanced multivariate analysis. After normalising the values at baseline, MANCOVA revealed a significant overall effect of the intervention on the three outcomes. The ANCOVAs were significant after the Holm correction. Exploratory mediation showed that the intervention effect of perceived competence explained about 31% of the motivation effects, which suggests that the musical did not only entertain pupils; some of the motivational change seemed to be a result of feeling competent.

The implications of education are educationally crucial as they indicate an arnontic trend as opposed to an unrelated statistical difference. In the event that motor performance alone had improved, then this can give the impression of a one-sided skill-drill type of intervention; in the event that the motivation alone had improved, maybe that indicates some short-term enjoyment without movement learning. The parallel enhancement of the three areas contributes to rhythmic gymnastics as an entry point to improved PJOK involvement, but not the entire skill replacement curriculum.

Table 3. Advanced multivariate and explanatory tests.

Test	Statistic	Interpretation
MANCOVA	Wilks' lambda=0.54, F(3,49)=13.72, p<0.001, partial eta-squared=0.46	Large combined intervention effect across motor, motivation, and attitude outcomes.
Adjusted gross motor effect	F(1,51)=39.84, p<0.001, partial eta-squared=0.44	Strongest specific effect, consistent with movement practice focus.
Adjusted motivation effect	F(1,51)=24.11, p<0.001, partial eta-squared=0.32	Meaningful psychological gain beyond ordinary PJOK exposure.
Adjusted attitude effect	F(1,51)=16.02, p<0.001, partial eta-squared=0.24	Moderate-to-large gain, but smaller than motor improvement.
Exploratory mediation	Indirect effect=3.1 points; 95% CI 1.0 to 5.9	Perceived competence partly explained the motivation gains.

Discussion

The results indicate that a 20-minute rhythmic gymnastics program may be a high-paying PJOK strategy because it involves three spheres of learning simultaneously. The greatest effect was the gross motor effect, which is not surprising, as only repetitions of rhythmic sequences directly train balance, coordination, timing, and whole-body control. This is consistent with systematic evidence of enhanced motor skills in children with structured physical activity [3,6]. This also correlates with developmental explanations that motor competence develops via diverse, repeated, and significant practice and not by passive exposure to action [7,8].

Nonetheless, the interpretation cannot be narrowed down to the movement results of the

motor gain. Pedagogical is the explanation that will be more useful: rhythm helps to suffer repetition less mechanically. Traditional PJOK can be effective in enhancing motor skills as well, but when we practice isolated exercises, weaker students become distracted. Conversely, repetition may be concealed by music, order, and group synchrony as performance and play. This may be the reason why the intervention provided not only better motor scores but also increased motivation. The results indicate that self-determination theory is indeed true, since pupils seem competent, related, and even expressively autonomous [9,10].

It also makes a favourable comparison with but does not eliminate conventional PJOK. Traditional lessons might be effective when they are designed to be inclusive and developmentally sequenced. The issue is that traditional formats tend to turn into teacher demonstrations, and further mismatched pupil practice when more proficient pupils get a more successful repetition and less confident pupils retreat. Another ecology of instruction is provided by rhythmic gymnastics: students train as a group, errors manifesting in movements are not publicly differentiated, and music gives pacing outside. This can reallocate participation opportunities more equally. However, teachers cannot assume that rhythm can bring about inclusion automatically. Adaptation may be needed for pupils who have poor timing or hearing problems, those who are shy, or those who have limited prior movement experience. Thus, the intervention can be seen as a dynamic pedagogical model and not a routine. It is effective based on the way teachers scaffold difficulty, normalise errors, and make progress visible to all learners.

The attitude effect was significant but less so than the motor and motivation effects. This opposition is significant in several ways. Greater improvement in motor competence can be achieved with the practice of certain kinds of movement, and greater motivation can be developed by making lessons enjoyable. However, attitudes are more cumulative; they

refer to past experiences, comparison with peers, family beliefs, and the perceived position of PJOK within school culture. Hence, a brief program can initiate attitude shift, but unless it is extended, chances of a complete alteration in the way pupils appreciate physical education are minimal. This is where there should be no over-claiming. A short rhythmic program can be a gateway to enhanced PJOK rather than a panacea for sedentary behaviour and adverse attitudes.

This wary interpretation is reinforced by mediation outcomes. Since perceived competence may be a partial explanation of motivation, the program must be structured in terms of progressive success, not just liveliness in music. Even with a badly crafted rhythmic lesson, pupils can still be left out by using too complicated movements, the teacher correcting in front of them, and the harsh assessment of performance. On the other hand, even a more traditional lesson, which is inclusive, progressive, and supportive of autonomy, can result in positive motivation. The benefit of rhythmic gymnastics is thus pragmatic as opposed to magic: it offers an effective framework in which good pedagogy can be practiced in a limited period.

The qualitative results provide additional details on the statistical trends. The music was appreciated by the pupils; however, their responses also indicated that social safety was important. Embarrassment was lessened with motion, which implies that rhythmic gymnastics is capable of mitigating the transparency issue prevalent in PJOK, where less talented students feel vulnerable. This is unlike competitive or elimination games that can have an invigorating effect on talented pupils and de-merit others. However, group synchrony has a disadvantage: students with rhythm problems might continue to feel conspicuous when the group insists on being unified. Teachers should then take liberty in the adaptation of movement, peer support, and the evaluation of effort and progression instead of aesthetic excellence.

Feasibility is the most appealing characteristic of schools. Twenty minutes can be accommodated into regular PJOK, morning activity, or health promotion sessions without the need for special equipment. However, the quality of implementation is central to this process. Teachers require explicit progressions of movement, appropriate music, a zone of safety, and informative feedback. Policymakers should not consider the programme as a substitute for a wide-ranging curriculum incorporating games, athletics, exploration of movements, and health education.

Another implication is related to assessments. Provided that teachers judge rhythmic gymnastics by cleanliness, synchronisation, or aesthetic performance, the programme can replicate the same expelling pressures the programme is meant to prevent. It should be assessed by favouring harmonisation, industriousness, enhancement, rhythm awareness, and secure involvement. This is in keeping with the wider purpose of PJOK: raising competent and enthusiastic movers, rather than just picking up those pupils who are already doing well. In this regard, the program has the potential to reinforce equity if it relates to formative feedback and personal improvement, but it will delegitimise equity if the program is another public performance test.

Limitations

The principal constraints pertain to the design strength, time, and depth of the measurements. The loss of causal certainty due to the use of intact classes is that groups may vary in their teacher interaction, peer climate, prior exposure to movement, and informal support provided by classmates. The brief intervention also implies that the results can be the change during the immediate post-programme but no longer retention of skills, motivation, or attitude. The qualitative cogitations were succinct and child-focused, which was facilitative but not in-depth; longer interviews or observations involving parents could have provided deeper information on whether the confidence achieved during the lesson extended further. There is also a

possibility that the measurement was affected by the pupils' familiarity with the structure of the test. Future studies should be registered for field testing with follow-up testing to test retention, specify implementation fidelity, and compare rhythmic gymnastics to a different active, autonomy-supportive PJOK model instead of merely conventional practice. It should also be investigated whether the effects were gender-dependent, baseline motor competence, attendance, and initial confidence as an intervention would be of lower inclusive value in situations where it positively affects already confident pupils and not those who are hesitant.

Practical Implications

First, when there is not enough time to read the lesson aloud, the teacher can rely on brief rhythm routines, which the teachers of PJOK can employ as organised warm-ups or main exercises. Second, increases in movement should be delayed to more complicated moves to enable the pupils to feel competent at first. Third, grading must reward engagement, enhancement, cooperation, trust, and healthy hard work, as opposed to polished marking. Fourth, educators should provide less tension demonstrations, peer modelling, and alternative movement choices to learners requiring assistance. Lastly, teacher guidance in schools regarding safe spacing, inclusion among music

choices, and adaptation to pupils with different motor skills, as well as simple fidelity checks, can ensure that the activity is educational and not simply recreational. Momentary peer modelling and questioning can also aid pupils in identifying progress, clarifying movement choices, and linking routines with broader health and confidence objectives.

Conclusion

A 20-minute rhythmic gymnastics program seems to be a viable and conceptually sound PJOK novelty among elementary school students. According to the results, gross motor skills gains are strong; there is a significant positive change in the motivation of learning, and moderate-to-large gains have been obtained in positive attitudes towards PJOK. The thematic results indicate that music, observable expertise, and socially secure group involvement are sensible mechanisms for such effects. Importantly, the program is not a magic bullet that will cure low activity, poor motivation, or bad attitudes. According to its critical consideration, the program must become a viable pedagogical proposal that must be implemented with care by a teacher. Short rhythmic activity sessions can assist schools in making physical education more active, enjoyable, and developmentally effective when part of a larger, inclusive PJOK curriculum.

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