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Study on the Level of Motor Control and Proprioception Among Folk Dance Athletes

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ABSTRACT. **Introduction:** Dance is a complex physical activity that integrates motor, cognitive, emotional, and social components. Through repetitive, rhythmical, and coordinated movements, dance contributes to the development of motor control, proprioception, balance, and overall psychomotor abilities. In childhood, these components are essential for harmonious physical and mental development. **Objectives:** This study aimed to investigate whether children who practice folk dance demonstrate higher levels of motor control and proprioception than children who do not participate in any sport, by comparing static and dynamic balance, as well as reaction time, between the two groups. **Methods:** A prospective study was conducted on 69 children aged 7-12 years, divided into an experimental group (34 folk dancers) and a control group (35 non-sport practitioners). The assessment included the Standing Stork Test for static balance, the Modified Bass Test for dynamic balance, and the Reaction Time Test. **Results:** The experimental group achieved significantly better results in both balance tests. In the Standing Stork Test, a statistically significant difference was observed between groups ($p = 0.041$), favouring folk dancers. The Modified Bass Test also showed a significant difference ($p = 0.001$), indicating superior dynamic balance in the experimental group. Although reaction time values were

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slightly better in dancers, no statistically significant differences were found between groups in either reaction time test ($p > 0.05$). **Conclusions:** The findings suggest that children who practice folk dance exhibit higher levels of motor control and proprioception, particularly in static and dynamic balance, compared with non-sport-practising peers. While reaction time did not show significant differences, the overall results support the role of folk dance as an effective activity for enhancing motor control and proprioceptive abilities in children.

Keywords: *folk dance, motor control, proprioception, balance, children, psychomotricity.*

INTRODUCTION

Dance is recognised as an effective means of improving physical fitness, fostering social skills, and enhancing mental health; it can be initiated early in life and continues to provide entertainment into older adulthood (Malkogeorgos et al., 2011). The specific qualities and benefits of dance vary by form, but generally, dance enhances physical health by developing strength, flexibility, coordination, and balance. Mental health benefits are attributed to increased self-esteem resulting from movement to music, cooperation with others, and the formation of new social connections (Bremer, 2007). Participation in dance activities supports the development of skills in recognising, differentiating, and executing rhythmic structures, dynamics, tempo, spatial orientation, and control. Various forms of dance contribute positively to coordination between the arms and legs, as well as overall body coordination (Cavallo, 2021). Folk dance, in particular, significantly influences the acquisition of complex motor tasks, reorganisation of movement patterns, rhythmic coordination, precision, and balance (Markovic et al., 2023).

Motor control is the ability to regulate the mechanisms essential to movement (Shumway-Cook & Woollacott, 2007). In Motor Control: Integrating Research into Clinical Practice, Shumway-Cook and Woollacott describe an integrated theory of motor control that reflects key elements of hierarchical, systems, dynamic action, and ecological theories. This integrated systems-based theory conceptualises movement as a product of the interaction between the individual, the task, and the environment. Shumway-Cook and Woollacott's theory, which views movement as produced by a person to satisfy the needs of a particular activity in a particular environment, echoes many ideas of other systems-based theories (Kenyon & Blackinton, 2011).

Every movement, from involuntary to goal-directed, in every body part, from head to toe, in every physical and social context—from solitary play to group interactions—is included in motor control. From the first fetal movement to the final breath, motor behaviour develops throughout a person's life (Adolph &

Franchak, 2017). Although movements fundamentally depend on the generation, control, and exploitation of physical forces, managing forces requires more than muscles and biomechanics. At every stage of development, adaptive control of movement relies on basic psychological functions (Bernstein, 1996). Perception and cognition are necessary for planning and guiding actions (Keen, 2011). Social and cultural factors stimulate and constrain motor behaviours (Adolph et al., 2010). Motor behaviours, in turn, provide the raw material for perception, cognition, and social interaction (Gibson, 1988; Piaget, 1954). Movements generate perceptual information, provide a means of acquiring knowledge about the world, and enable social interactions. Proprioception refers to the sense of body position and movement. In addition to the senses of position and movement, it includes the sense of effort, force, and weight. In order to enhance or restore sensorimotor function, proprioceptive training is an intervention (Aman et al., 2015; Winter et al., 2022).

Humans have a multitude of senses, including sight, hearing, smell, taste, and somatosensory perception, which are traditionally described as the five senses. In the 19th century, Scottish anatomist Sir Charles Bell first characterised the "muscle sense" as the sixth sense (Singh, 1991; Dickson et al., 2000; Bell, 1834). In the early 20th century, Charles Scott Sherrington studied the peripheral sources of sensory input and their control over muscle contraction, and introduced the terms "exteroception", "interoception", and "proprioception" (Sherrington, 1906; Sherrington, 1913). Exteroception detects environmental stimuli from outside the body, while interoception detects internal states or signals from internal organs. Proprioception detects the movements of our body, including those of our limbs and muscles (Moon, 2021).

According to Riemann and Lephart (2021), proprioception encompasses proprioceptive information used by the higher nervous system to produce sensations of limb and body position and movement. Mechanoreceptors are specialised sensory receptors that transduce mechanical stimuli into neural signals and provide proprioceptive information. They are mainly found in muscles, tendons, ligaments, capsules, and skin. Proprioceptive information is transmitted to the central nervous system for processing and, ultimately, the regulation of reflexes and motor control results (Hewett et al., 2002).

The proprioceptive system, in general, allows the proper functioning of the locomotor apparatus during movement and sports activities, maintains muscle tone, and helps us accurately differentiate isolated body movements, which are particularly attractive in choreographed dancers (Ljubojević et al., 2020).

Developing an understanding of proprioception and implementing targeted proprioceptive training within physical conditioning for dance sport may improve body awareness, enhance dance performance, and reduce the risk of injury (Batson, 2009). Employing such training methods can facilitate meeting the aesthetic and physical demands of dance sport. Furthermore, minimising injury risk may contribute to the longevity of a dancer's career (Ljubojević et al., 2020).

Psychomotricity is a cross-disciplinary field of study, drawing on disciplines that define the complexity of the processes underlying the meaning of various human bodily manifestations, contextualised within movement, integration, and the individual's relationship with their extremely diverse environment.

The term "balance" refers to a type of coordination of motor movements in which the visual and kinesthetic components of the body's muscles work together with balance sensors in the middle ear to maintain stability without unnecessary movement or falls (Goddard, 2017).

The body's ability to balance depends on internal systems, such as the vestibular system (balance sensors), the proprioceptive system (motion sensors), and the visual system. Balance also depends on external factors, such as the base of support, the centre of gravity, and the body's structure and weight (Davlin, 2004).

Several external and internal factors influence an individual's ability to maintain balance, including genetics, age, support zone, centre-of-mass positioning, emotional state, strength, coordination, flexibility, frequency of motor activity participation, and fitness level. Regardless of these factors, static and dynamic balance remain indispensable motor skills, as they lie at the heart of all human movements (Stanković & Radenković, 2002).

In the field of locomotion, the ability of bipedal creatures to stabilise themselves is crucial and requires them to be perpendicular to their centre of gravity and their support zone, i.e., to stand on their feet and the area between their legs. The transition from standing on one leg to the other requires a forward movement with a narrow base, while maintaining stability and activating the balance system as part of the posture (Hof, 2008). In addition, basic movements such as running, changing direction, stopping, and advancing on elevated surfaces require the person to maintain stability and require training to develop the balance system (Haddad et al., 2013).

The term dynamic balance refers to the ability to maintain the centre of gravity above the base of support during movement, even as the body moves away from it. In dynamic balance, the primary process is the coordination between maintaining the trunk above the centre of gravity and various forward movements, which enables stability and reflex responses to changes in movement. To successfully maintain dynamic balance, one must be prepared with responses to expected changes (Hatzitaki et al., 2002). Dynamic balance is part of any progression skill and manifests itself at the moment of transition from base to base, when there is a detachment of a moving body part from the ground. Examples of detachment are walking, running, jumping, and landing (Yanovich & Bar-Shalom, 2022).

In activities such as dance, dynamic balance is essential for accurate movement execution and injury prevention. Dancers are required to rapidly shift their centre of gravity while maintaining stability during complex movements.

Among the many activities, dance is cited as one that improves balance (Davlin, 2004). As we know, postural balance is an important component skill for dancers (Steinberg et al., 2018). Dance performance is a complex act that involves many elements, including strength, balance, flexibility, and endurance (Janura et al., 2019). Data show that dancers' skill depends largely on practical technical training, with elements of good posture and balance, and requires the encoding of sensory inputs to build mental representations of the action to be performed (Yanovich & Bar-Shalom, 2022; Hugel et al., 1999).

The human ability to coordinate our movements plays a role in dozens of everyday contexts, allowing us to plan and perform motor tasks ranging from walking to dancing. Coordination has been defined as the organisation of degrees of freedom within a motor system in relation to one another (Black, 2007; Hartmann et al., 2019).

Hand-eye coordination is the ability of the central nervous system to integrate visual information to control, guide, and direct the hands during a given task (Wong et al., 2019; Pepper, 1984).

In recent years, various forms of dance have been widely promoted in the professional press and have attracted considerable attention in the medical literature. This trend aligns with increased awareness of physical fitness, driven by accumulating evidence linking cardiovascular disease to physical inactivity, reduced cardiopulmonary fitness, and obesity. Multiple authors have proposed that dance is a viable alternative to traditional physical exercise for modifying sedentary behaviour and maintaining fitness and optimal body weight (Hanna, 1995).

Dance engages the body, emotions, and mind, paralleling the multifaceted nature of illness and pain. Participation in dance may promote well-being by strengthening the immune system through muscular activity and physiological processes. Additionally, dance can help individuals moderate, eliminate, or avoid tension, chronic fatigue, and other stress-related conditions (Verhaar et al., 2022).

From a physical and physiological perspective, childhood marks the most important stage of development, during which personality is formed (Melguizo-Ibanez et al., 2022). The influence of the growing environment and the activities carried out is crucial for the physical and mental development of children, and emotional control plays an essential role in the formation of a healthy lifestyle from a cognitive (subjective), behavioural (expressive), and psychological (adaptive) point of view (Vasilopoulos, 2023).

The use of dance and folk dances in early school-age plays a crucial role in the development of motor skills and the general psychophysical development of children in this age group (Tortora, 2006).

Children's free expression through spontaneous dance is an intrinsic part of childhood. As a child explores the world, actively engaging with it physically, a sense of self and empowerment in it develops (Faber, 2016).

The earlier dance education begins, the greater the chances of developing intelligence. Brain activity is significant in children, and this sport has a positive impact on mental, emotional, and social well-being from the first years of life, with forms of communication during this period based on gestures and movements (Karpati et al., 2016).

Compared to people who practice other physical and leisure activities, dancers and musicians have a greater ability to distinguish sounds, understand information, anticipate and imitate the following movements of people around them or other living organisms, feel the rhythm and synchronise movements with music, orient themselves in space and time and control their posture (Tomescu et al., 2023; Epuran & Stănescu, 2010).

The purpose of this study was to determine whether dance athletes exhibit higher levels of motor control and proprioception compared to non-athletes, as assessed by static and dynamic balance and reaction time.

The hypothesis posits that regular dance rehearsals positively influence the development of motor control and proprioception in dancers compared to non-dancers.

MATERIAL AND METHOD

Participants

Participants included 69 children aged 7–12 years, divided into two groups: an experimental group of 34 children who practised folk dance and a control group of 35 children who did not participate in sports activities.

Inclusion criteria were: age between 7 and 12 years and active participation in the Zsurló folk dance group. The control group consisted of students from "Aurel Mosora" Secondary School in Sighișoara who did not practice sports.

The study was approved by the Ethics Committee of the "George Emil Palade" University of Medicine, Pharmacy, Science and Technology of Târgu Mureș (Approval no. 2760, 2024). The research respected the Declaration of Helsinki (2013) and the General Data Protection Regulation (EU) 2016/679.

Procedure

The assessment included three tests:

- Standing Stork Test for static balance
- Modified Bass Test for dynamic balance
- Reaction Time Test (CPS Check) for hand-eye coordination

Invalid attempts in the reaction test were excluded from analysis. Final samples were:

- 69 subjects for balance tests
- 66 subjects for Reaction Time Test 1
- 67 subjects for Reaction Time Test 2

The prospective study was conducted using the bibliographic study method, non-participant observation, measurement and recording through standardised tests, and graphical presentation of results.

This topic was selected to provide a significant contribution to understanding the influence of folk dancing on the development of motor and sensory skills in children. The findings may inform the implementation of educational and sports programs and promote the benefits of dance by integrating physical education and psychomotor education.

The tests administered included the Standing Stork Test, the Modified Bass Test, and the Reaction Time Test (CPS-Check).

The Standing Stork Test assesses static balance

The test requires the participant to stand on one leg for up to 60 seconds on a flat surface. Following a brief warm-up, the participant lifts one leg and places it on the supporting leg's knee, with both hands on the hips. The objective is to maintain the raised-and-flexed-leg position for as long as possible. Timing begins once the correct position is achieved and ends when the raised leg touches the ground or after 60 seconds. If the participant is unable to maintain the position for the full duration, the elapsed time is recorded. A stopwatch is used for timing.

The Modified Bass Test evaluates dynamic balance

The participant is required to walk a designated route without losing balance. The test begins with the participant standing on one leg, with the left lower limb on the paper marked "Start." The participant then jumps onto the paper labelled "1" with the right lower limb and remains stationary. After five seconds, upon the examiner's signal, the participant proceeds to the paper labelled "2" with the left lower limb. This sequence continues until reaching the final paper labelled "10," where the test concludes with the participant standing on the left lower limb.

Scoring is based on awarding five points for each correct landing, defined as the entire foot placed stably on the paper, and one point for each second the participant maintains balance on one leg. The maximum possible score is 100 points. The examiner records each landing and the duration spent balanced on each paper. Materials required include paper, adhesive tape, and a stopwatch.

The Reaction Time Test is an online assessment designed to evaluate hand-eye coordination. Upon accessing the application, participants are prompted to click to initiate the test. After clicking, the image changes, and participants must wait until the screen turns green before clicking again as quickly as possible. The application records reaction time in milliseconds. If a participant clicks before the screen turns green, the screen turns red, and the attempt is invalidated. Each participant completes two trials, and both results are recorded. Testing is conducted using a mouse. Invalid attempts are not repeated. Materials used include a laptop and a mouse.

Data analysis

Descriptive statistics were calculated, including the mean, median, standard deviation, minimum, and maximum. The Anderson-Darling test was used to assess the normality of data distribution. For comparison between groups, the independent-samples Student's t-test was used. The level of statistical significance was set at $p < 0.05$. All analyses were performed using Minitab software (version 20.3, Minitab LLC, 2021).

RESULTS

In total, we tested 69 subjects: 39 females and 30 males. We juxtaposed their results by comparing the average and minimum/maximum values, the results relative to the average in each test, and the number of disabilities in the Reaction Time Test.

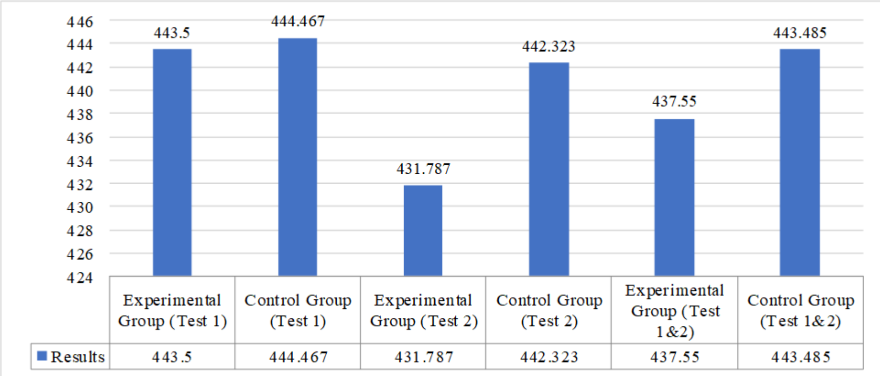


Fig. 1. Comparison between the average results, The Reaction Time Test (UM=ms)

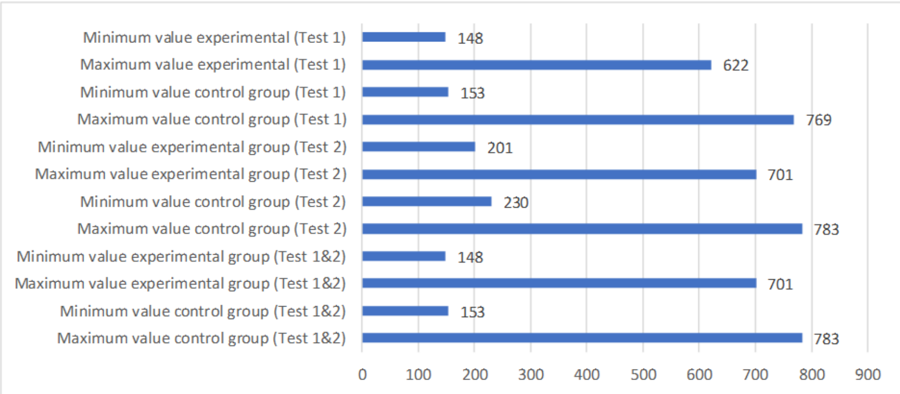


Fig. 2. Comparison of extreme values, The Reaction Time Test (UM=ms)

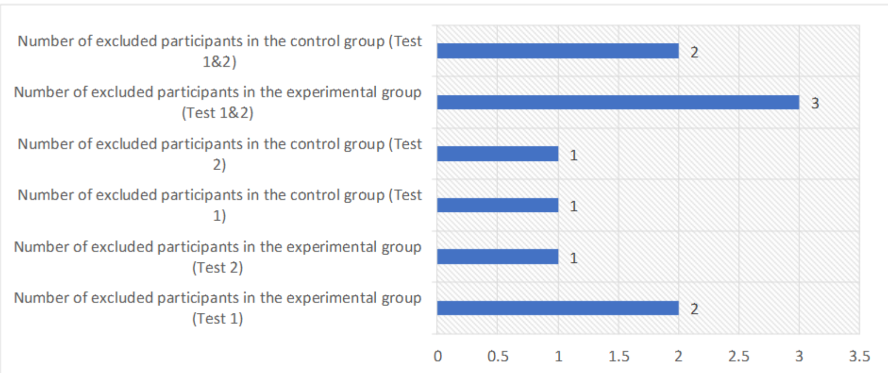
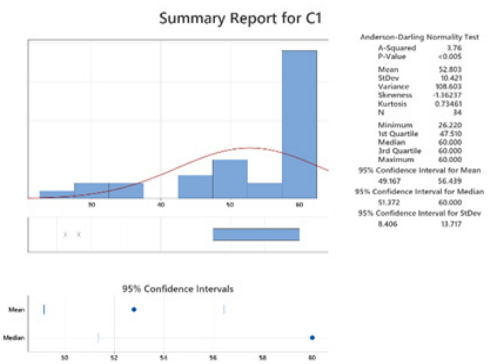


Fig. 3. Number of disabilities, The Reaction Time Test

Descriptive and inferential statistics, including the median, mean, and standard deviation, were used in the analysis. The Anderson-Darling normality test assessed the data's conformity to a normal distribution. The Student's t-test for unpaired data was employed to compare means. Statistical analyses were conducted using Minitab (Minitab 20.3, LLC, 2021).

Table 1. Analysis of the Standing Stork test

	Experimental group - EG	**Control Group - CG**
Average	52.8	46.7
Minimum	26.2	11.6
Median	60	60
Maximum	60	60
	p=0.041	



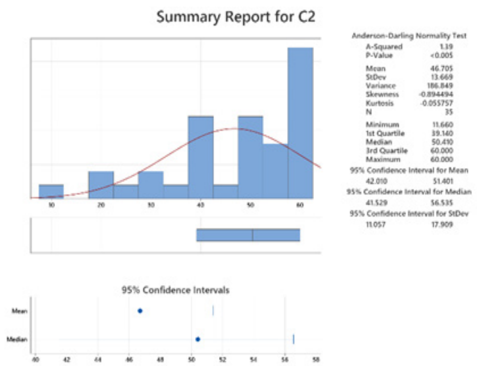


Fig. 4. Normality test AD Experimental Group **Fig. 5**. Normality test AD Control Group

Anderson-Darling test, p<0.05: there is a statistically significant difference between the median values of the two groups.

Table 2. Modified Bass Test Analysis

	Experimental group - EG	**Control Group - CG**
Average	92.8	85.8
Std Deviation	6.6	7.5
T-Test	p=0.001	

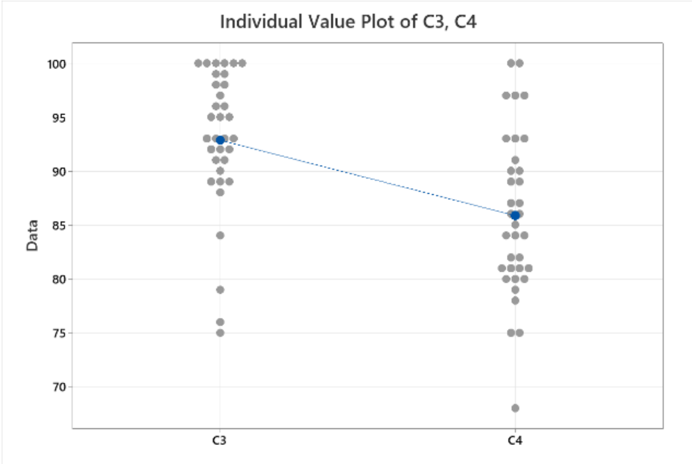


Fig. 6. Outlier analysis GE., GC., Modified Bass test (C3-GE, C4-GC)

Student's T-test, $p<0.05$: there is a statistically significant difference between the median values of the two groups.

Table 3. Analysis of the Reaction Time Test 1

	Experimental group - EG	Control Group - CG
Average	444	445
Std Deviation	114	143
T-Test	p=0.971	

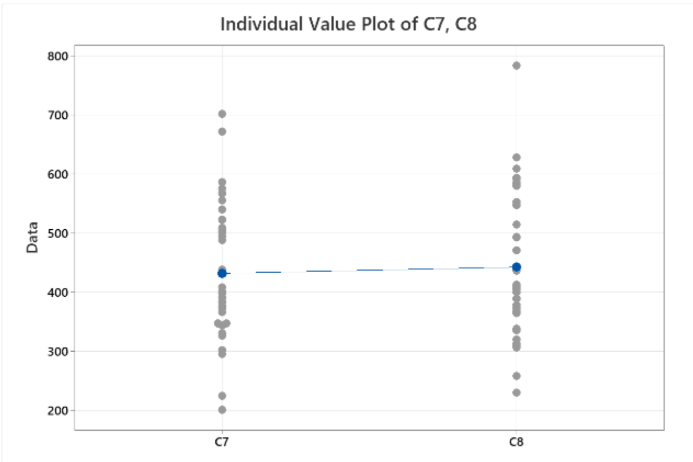


Fig. 7. Outlier analysis GE., GC. The Reaction Time Test 1 (C5-GE, C6-GC)

Student's T-test, p>0.05: there is no statistically significant difference between the medians of the two groups.

Table 4. Analysis of the Reaction Time Test 2

	Experimental group - EG	Control Group - CG
Average	432	442
Std Deviation	118	128
T-Test	p=0.727	

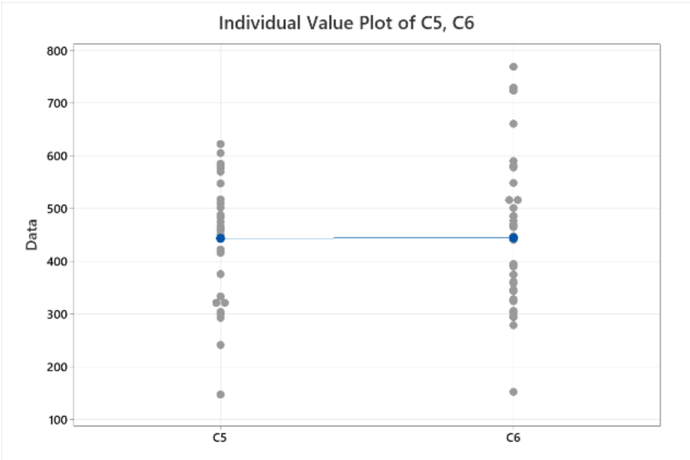


Fig. 8. Outlier analysis GE., GC.. The Reaction Time Test 2 (C7-GE, C8-GC)

Student's T-test, p>0.05: there is no statistically significant difference between the medians of the two groups.

DISCUSSIONS

This study indicates that children who participate in folk dance demonstrate better motor control and proprioception than non-dancers, as evidenced by improved static and dynamic balance and quicker reaction times. These findings align with existing research that connects dance training to gains in strength, coordination, postural control, and multisensory integration. Regular rehearsals likely improve sensory encoding in the visual, vestibular, and proprioceptive systems, thereby supporting internal models for anticipatory and reactive movement adjustments. Improved balance and hand-eye coordination in dancers may reduce injury risk, extend active participation, and inform the development of school- and community-based programs focused on psychomotor skills.

As shown in the results above, the subjects practising folk dance performed better on each test than the control group. In the Standing Stork test, the experimental group had an average of 6.098 seconds higher than the control group. Analysing the maximum value, there were no differences, but the minimum value was 14.56 seconds lower in the control group than in the experimental group. Another result that did not show significant differences is the number of subjects who obtained a value higher than the group average. In both groups, approximately 60% of participants exceeded the average, while approximately 40% fell below it. Schell and Leelarthaepin (1994) presented a table of results from this test (Table 2). Based on this table, the experimental group has 1 subject at the average level, while the control group has 2 at the average level and 1 at the below-average level.

Table 4. Standing Stork test classification, according to Schell and Leelarthaepin (UM=s)

	Excelent	Above Average	Average	Below average	Poor
M	>50	37-50	15-36	5-14	<5
F	>27	23-27	8-22	3-7	<3

Looking at other literature studies, we can see both similarities and discrepancies. A 2011 study shows that dance improved static balance in children playing soccer, while other research reported no significant improvements in children's balance due to dance (Ricotti & Ravaschio, 2011; Chatzopoulos et al., 2018).

In the Modified Bass test, which assesses dynamic balance, the experimental group also performs better. The difference between the two sample means is 7 points. As observed in the above test, the maximum value is the same in both groups, and the difference between the minimum values in the control and experimental groups is also 7 points, in favour of the latter. Another factor supporting the idea that dancing children have a higher level of dynamic balance is the distribution of the subjects relative to the mean of the results. 59% of subjects in the experimental group exceeded the sample mean, whereas only 49% in the control group did so. However, some studies criticise this test, stating that it seemed too easy to administer to their subject population (Tsigilis et al., 2001). Also, in 2011, other research failed to show differences in balance between active dancers and non-dancers using this test (Ambegaonkar, 2011).

The Reaction Time Test also showed superior results in the experimental group, though the differences were less pronounced. The average value of the four tests showed a difference of only 6 milliseconds. The extreme values did not differ significantly either, or, in terms of disabilities, there were three in the experimental group compared to two in the control group. The study conducted by Quiroga Murcia and his collaborators in 2010 investigated the benefits of dance on health and well-being, including reaction time in children. The study found that subjects who practiced dance showed significant improvements in reaction time compared with those in the control group (Quiroga et al., 2010). Similar conclusions were reached by Kattenstroth et al. (2013) following a 6-month study analysing the reaction time of subjects who practiced dance for 1 hour per week.

The results of this study show that preschool children who practice folk dance have higher levels of static and dynamic balance, but it cannot be stated with certainty that practicing dance would directly improve hand-eye coordination. For the latter, more specialised studies are needed to prove it.

However, despite the lack of significant differences in reaction time, the results from the other tests confirm the hypothesis that regular dance practice improves motor control and proprioception.

Thus, we can, with evidence, suggest integrating folk dance into school physical education programs, and children's reactions and attitudes confirm that they would be open to such a change.

Strengths and Limitations of the Study and Future Research Directions

The strengths of this study include the use of standardised field tests and a real-world sample; however, several limitations should be considered. The modest sample size, restricted age range, and cross-sectional design limit generalizability and preclude causal inference. Reliance on clinical tests and an online reaction task may introduce practice effects and may lack the sensitivity of instrumented measures. Future research should employ longitudinal or randomised interventions, recruit larger and more diverse cohorts, utilise wearable or laboratory-based assessments of proprioception and balance, and investigate dose–response relationships and functional outcomes. Despite these limitations, the findings support integrating folk dance into childhood physical education to enhance motor skills, sensorimotor integration, and broader health-related outcomes.

CONCLUSIONS

In conclusion, the results indicate that athletes who practice folk dance demonstrate higher motor control and proprioception than those who do not participate in sports. Early education in folk dance supports both physical and mental health. This and other research confirm that balance improves through movement, and folk dance offers distinct advantages in this area.

AUTHOR CONTRIBUTIONS

All authors contributed to the study design, data collection, analysis, and manuscript writing. All authors approved the final version.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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REFERENCES

Adolph, K. E., Karasik, L. B., & Tamis-LeMonda, C. S. (2010). Motor skills. In M. H. Bornstein (Ed.), *Handbook of cultural development science (*61–88). Taylor & Francis.

Adolph, K. E., & Franchak, J. M. (2017). The development of motor behavior. *Wiley interdisciplinary reviews. Cognitive science, 8* (1-2). https://doi.org/10.1002/wcs.1430

Aman, J. E., Elangovan, N., Yeh, I. L., & Konczak, J. (2015). The effectiveness of proprioceptive training for improving motor function: A systematic review. *Frontiers in Human Neuroscience*, 8, 1075. https://doi.org/10.3389/fnhum.2014.01075

Ambegaonkar, J. P., Redmond, C. J., Winter, C., Cortes, N., Ambegaonkar, S. J., Thompson, B., & Guyer, S. M. (2011). Ankle stabilisers affect agility but not vertical jump or dynamic balance performance. *Foot & Ankle Specialist, 4*(6), 354–360. https://doi.org/10.1177/1938640011428509

Batson, G. (2009). Update on proprioception: Considerations for dance education. *Journal of Dance Medicine & Science, 13*(2), 35–41.

Bell, C. (1834). *The hand: Its mechanism and vital endowments*. W. Pickering.

Bernstein, N. A. (1996). *Dexterity and its development.* Lawrence Erlbaum Associates.

Black, D. P., Riley, M. A., & McCord, C. K. (2007). Synergies in intra- and interpersonal interlimb rhythmic coordination. *Motor Control, 11*(4), 348–373. https://doi.org/10.1123/mcj.11.4.348

Bremer, Z. (2007). Dance as a form of exercise. *British Journal of General Practice, 57*(535), 166.

Cavallo, A. (2021). *Rhythmic movement for body awareness and confidence in children with learning disabilities.* Texas Christian University.

Chatzopoulos, D., Doganis, G., & Kollias, I. (2018). Effects of creative dance on proprioception, rhythm and balance of preschool children. *Early Child Development and Care* https://doi.org/10.1080/03004430.2017.1423484

Constantin, A., Adriana, A., Tiberiu, V. L., & Ioan, I. (2006). *Psihomotricitatea*. Institutul European.

Davlin, C. D. (2004). Dynamic balance in high level athletes. *Perceptual and Motor Skills, 98*(3), 1171–1176. https://doi.org/10.2466/pms.98.3c.1171-1176

Dickinson, M. H., Farley, C. T., Full, R. J., Koehl, M. A., Kram, R., & Lehman, S. (2000). How animals move: An integrative view. *Science, 288*(5463), 100–106. https://doi.org/10.1126/science.288.5463.100

Epuran, M. (1976). *Psihologia educației fizice*. Sport-Turism.

Epuran, M., & Stănescu, M. (2010). *Învățarea motrică: Aplicații în activități corporale*. Discobolul.

Faber, R. (2016). Dance and early childhood cognition: The Isadora effect. *Arts Education Policy Review*. https://doi.org/10.1080/10632913.2016.1245166

Gibson, E. J. (1988). Exploratory behavior in the development of perceiving, acting, and acquiring knowledge. *Annual Review of Psychology, 39*, 1–42. https://doi.org/10.1146/annurev.ps.39.020188.000245

Goddard Blyth, S. (2017). *Attention, balance and coordination: The A.B.C. of learning success* (2nd ed.). Wiley-Blackwell.

Haddad, J. M., Rietdyk, S., Claxton, L. J., & Huber, J. E. (2013). Task-dependent postural control throughout the lifespan. *Exercise and Sport Sciences Reviews, 41*(2), 123–132. https://doi.org/10.1097/JES.0b013e3182877cc8

Hanna, J. L. (1995). The power of dance: Health and healing. *Journal of Alternative and Complementary Medicine, 1*(4), 323–331. https://doi.org/10.1089/acm.1995.1.323

Hewett, T. E., Paterno, M. V., & Myer, G. D. (2002). Strategies for enhancing proprioception and neuromuscular control of the knee. *Clinical Orthopaedics and Related Research, 402*, 76–94. https://doi.org/10.1097/00003086-200209000-00008.

Hewett, T. E., Paterno, M. V., & Myer, G. D. (2002). Strategies for enhancing proprioception and neuromuscular control of the knee. *Clinical Orthopaedics and Related Research, 402*, 76–94. https://doi.org/10.1097/00003086-200209000-00008

Hugel, F., Cadopi, M., Kohler, F., & Perrin, P. (1999). Postural control of ballet dancers. *International Journal of Sports Medicine, 20*(2), 86–92. https://doi.org/10.1055/s-2007-971098

Janura, M., et al. (2019). Standing balance of professional ballet dancers. *PLOS ONE, 14*(10), e0224145. https://doi.org/10.1371/journal.pone.0224145

Kattenstroth, J. C., Kalisch, T., Holt, S., Tegenthoff, M., & Dinse, H. R. (2013). Six months of dance intervention enhances postural, sensorimotor, and cognitive performance in elderly without affecting cardio-respiratory functions. *Frontiers in aging neuroscience*, 5, 5. https://doi.org/10.3389/fnagi.2013.00005

Keen R. (2011). The development of problem solving in young children: a critical cognitive skill. *Annual review of psychology*, 62, 1–21. https://doi.org/10.1146/annurev.psych.031809.130730

Kenyon, L. K., & Blackinton, M. T. (2011). Applying motor-control theory. *Physiotherapy Canada, 63*(3), 345–354. https://doi.org/10.3138/ptc.2010-06

Ljubojević, A., Popović, B., Bijelić, S., & Jovanović, S. (2020). Proprioceptive training in dance sport: Effects on agility skills. *Turkish Journal of Kinesiology*, *6*(3), 109–117. https://doi.org/10.31459/turkjkin.742359

Malkogeorgos, A., Zaggelidou, E., & Georgescu, L. (2011). The effect of dance practice on health. Asian Journal of Exercise and Sports Science

Marković, J., et al. (2023). Efficiency of an alternative physical education program. Children, 10(10), 1657. https://doi.org/10.3390/children10101657

Melguizo-Ibáñez, E., González-Valero, G., Badicu, G., Filipa-Silva, A., Clemente, F. M., Sarmento, H., Zurita-Ortega, F., & Ubago-Jiménez, J. L. (2022). Mediterranean Diet Adherence, Body Mass Index and Emotional Intelligence in Primary Education Students-An Explanatory Model as a Function of Weekly Physical Activity. *Children*, *9*(6), 872. https://doi.org/10.3390/children9060872

Moon, K. M., et al. (2021). Proprioception, the regulator of motor function. *BMB Reports, 54*(8), 393–402. https://doi.org/10.5483/BMBRep.2021.54.8.052

Pepper, M. S. (1984). Dance as exercise. *South African Medical Journal, 66*(23), 883–888.

Piaget, J. (1954). *The construction of reality in the child*. Basic Books.

Quiroga Murcia, C., et al. (2010). Shall we dance. *Arts & Health, 2*(2), 149–163. https://doi.org/10.1080/17533010903488582

Ricotti, L., & Ravaschio, A. (2011). Break dance increases balance. *Gait & Posture, 33*(3), 462–465. https://doi.org/10.1016/j.gaitpost.2010.12.026

Riemann, B. L., & Lephart, S. M. (2002). The sensorimotor system. *Journal of Athletic Training, 37*(1), 71–79.

Schell, J., & Leelarthaepin, B. (1994). *Physical fitness assessment in exercise and sports science*. Leelar Biomedisience Services.

Sherrington, C. S. (1906). *The integrative action of the nervous system*. Yale University Press.

Sherrington, C. S. (1913). Reflex inhibition in movement coordination. *Quarterly Journal of Experimental Physiology*.

Shumway-Cook, A., & Woollacott, M. H. (2007). *Motor control: Translating research into clinical practice*. Lippincott Williams & Wilkins.

Singh, A. K. (1991). *The comprehensive history of psychology*. Motilal Banarsidass.

Stanković, M., & Radenković, O. (2012). Balance in preschool children involved in dance. *Research in Kinesiology, 40*, 40–45.

Steinberg, N., et al. (2018). Postural balance in ballet dancers. *Motor Control, 22*(1), 45–66. https://doi.org/10.1123/mc.2016-0076

Tomescu, G., et al. (2023). Dance as an educational resource. *Children, 10*(6), 1039. https://doi.org/10.3390/children10061039

Tortora, S. (2006). *The dancing dialogue*. Brookes Publishing.

Tsigilis, N., Zachopoulou, E., & Mavridis, T. (2001). Evaluation of the specificity of selected dynamic balance tests. *Perceptual and motor skills*, *92*(3 Pt 1), 827–833. https://doi.org/10.2466/pms.2001.92.3.827

Vasilopoulos, F., Jeffrey, H., Wu, Y., & Dumontheil, I. (2023). Multi-level meta-analysis of whether fostering creativity during physical activity interventions increases their impact on cognitive and academic outcomes during childhood. *Scientific Reports*, *13*(1), 8383. https://doi.org/10.1038/s41598-023-35082-y

Verhaar, S., Matthewson, M. L., & Bentley, C. (2022). The Impact of Parental Alienating Behaviours on the Mental Health of Adults Alienated in Childhood. *Children*, *9*(4), 475. https://doi.org/10.3390/children9040475

Winter, L., Huang, Q., Sertic, J. V. L., & Konczak, J. (2022). The Effectiveness of Proprioceptive Training for Improving Motor Performance and Motor Dysfunction: A Systematic Review. *Frontiers in rehabilitation sciences*, *3*, 830166. https://doi.org/10.3389/fresc.2022.830166

Yanovich, E., & Bar-Shalom, S. (2022). Balance in children. *Children, 9*(7), 939. https://doi.org/10.3390/children9070939