

## INFLUENCE OF TRADITIONAL DANCE TRAINING PROGRAMS ON DYNAMIC BALANCE OF PEOPLE WITH INTELLECTUAL DISABILITY: A SHORT REVIEW

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**Abstract.** Traditional dance is gaining popularity as an intervention choice for improving poor balance ability of people with intellectual disability (ID). Balance improvement for individuals with ID through dance provides opportunities for participation in sport activities and promotes independent living. This short review provides in brief research evidence of dynamic balance improvement as measured by means of a balance deck in duration of 30, 45, and 60 sec intervals, highlighting the need to incorporate traditional dance programs in Physical Education (PE) lessons applied on participants with ID. Overall, traditional dances provide emotional and cognitive interaction that has a direct positive effect on quality of life and successful motor performance of individuals with ID.

**Key words:** intellectual disability, traditional dance, physical activity, balance.

### Introduction

Learning and execution of new skills is considered a basic success feature for all sport activities that is influenced by balance ability (McGuine, Greene, Best, & Leverson, 2000; Meinel, & Schnabel, 1998) which in turn constitutes a reliable predicting factor concerning the development of basic motor skills such as walking, running and throwing (Butterfield, & Loovis, 1994). However, in the case of individuals with intellectual disability (ID) balance represents one of the most incomplete motor skill areas (Tsimaras, & Fotiadou, 2004) that is considerably lower when compared to individuals with typical IQ (Cratty, 1980). In general, individuals with ID demonstrate poor balance ability (Sage, 1977) due to insufficient perception ability treatment of environmental stimuli which in turn results to frequent falls and risk of athletic injuries.

Therefore, balance improvement for individuals with ID is considered as most important issue that provides the opportunity to walk and move within living environment promoting independence. In fact, participation of individuals with ID in appropriate intervention programs provides central nervous system adaptations through exercise that in turn leads individuals with ID to exhibit balance performance that is equal to the performance of their peers with typical IQ (Kanode & Payne, 1989).

Traditional dances uses simple teaching methods that allows the participation of individuals with disabilities. Furthermore, as a music-kinetic activity can be easily applied in almost every setting since no additional equipment is needed. Dance is already known to positively influence static and dynamic balance ability to such a great extent that is considered as the ideal physical activity for children (Loeffler, 2007) and adults (Federici, Bellagamaba, & Rocchi, 2005) with disabilities suffering from lack of balance due to kinaesthetic difficulties and hearing loss (Reber, & Sherrill, 1981).

As for individuals with ID, it is generally evident that dance improves their balance and enhances creativity, sensitivity and expression (Sherrill, & Delaney, 1986) although rhythm difficulties of individuals with ID are often present. This often leads to contradictory research findings that report (Boswell, 1993; Neofotistou, 2006) or may not report (Thomas, 1984; Roswall, Sherrill, & Roswall, 1988) balance improvement of individuals with ID following dance practice, whereas a lack of research is noted concerning the effectiveness of traditional dance programs on improving balance skills of individuals with ID.

### Purpose

We have conducted several studies (Tsimaras & Fotiadou, 2004; Tsimaras, Angelopoulou, Tsorbatzoudis, Abatzidis, & Mandroukas, 2000) throughout the years leading to balance improvement of individuals with ID due to their participation in appropriate intervention programs and in this regard a short presentation of our research effort (Tsimaras, Giamouridou, Kokaridas, Sidiropoulou, & Patsiaouras, 2012) is presented here.

### Material

The participants of this study were seventeen individuals assigned to two -control (ID-C) and intervention (ID-I)-groups including individuals with mild ID living independently in the community, aged 16-20 years, all students of the Center of Professional Learning.

Dynamic balance measures by means of a balance deck in duration of 30, 45, and 60 sec intervals were applied for all participants of both groups prior and after the application of a 16-week traditional dance program only for ID-I individuals who also did not participate in other training programs during the study, at a frequency of 3 training sessions per week, for 45 minutes each session. No ID-I individual was absent for more than 10% of the total number (48) of sessions.

Each session included a five minutes warm-up period with stretching exercises so as to avoid possible ankle strain and gastrocnemius muscle injuries, followed by the main part of the traditional dance program, with a short rest period between dances and a five minutes rest period in the middle of each session. Each session concluded with a five minutes cool down period. Overall, ten Greek traditional dances were practiced throughout the whole program, with continuous verbal and visual feedback provided in each session.

## Results

Initial results revealed that no-significant differences between ID-I and ID-C group in each condition prior intervention. However, post training results showed significant differences in 30 sec ( $p < .008$ ), 45 sec ( $p < .005$ ), and 60 sec ( $p < .005$ ) concerning the ID-I group. Statistically significant differences were also noticed in the ID-C group in 60 sec condition ( $p < .034$ ), with ID-C group demonstrating a decreased performance as regards to the number of seconds ID-C participants performed standing on the stabilometer.

## Conclusions

Without a doubt, dance affects positively the balance ability of individuals of all ages with (Birkel, 1998; Vuillerme, Daninon, Martin, Boyadjian, Prieur, Welse, & Nougler, 2001; Maurovouniotis, Argiriadou, Maurovouniotis, & Zaggelidis, 2007) and without typical IQ (Angelopoulou-Sakadami, Giangoudaki, Bouli-Kalahani, & Hajisevastory-Loukidou, 1995; Boswell, 1991; Roswall, & Frith, 1983; Smail, & Horvat, 2005).

Post-training results for the ID individuals of this study revealed a significant dynamic balance improvement for ID-I group individuals. This could be first attributed to the nature of Greek traditional dances that require participants holding hands while formatting and moving in a circle. The continuous hand support received on both (left and right) sides of each participant's body constitutes an ideal way to promote balance as in the case of the individuals with ID in this study. The different rhythm required for each dance further improves eye-hand and eye-foot co-ordination in different speed and circle formations, while at the same time fun, co-operation and friendship are promoted. Promoting dynamic balance leads to minimize the risk of falling while developing enjoyment and a sense of companionship towards a common goal of emotional expression and fulfillment through music and movement.

Balance improvement of ID-I participants is also attributed to the duration (16 weeks), frequency (3> training sessions per week) and steady participation with no absence of all ID-I individuals. Furthermore, worsening of performance for ID-C group highlights the importance for individuals with ID to participate in similar dance intervention programs that provide opportunities of learning, practicing, quality teaching, and motivation (Gallahue, & Ozmun, 1998). As the findings of the study showed, individuals with ID are indeed capable to learn adequately complex activities and technical movements (Eichstaedt & Lavay, 1992) such as traditional dances.

Moreover, recent researches showed a positive effect of traditional dance on dancing skills, rhythm and orientation abilities and on intrinsic motivation of individuals with hearing loss (Kaltsatou, Fotiadou, Tsimaras, Kokaridas, & Sidiropoulou, 2013) and on neuromuscular coordination of individuals with autism (Arzoglu, Tsimaras, Kotsikas, Fotiadou, Sidiropoulou, Proios, & Bassa, 2013) showing that dance programs represent an effective and safe mean for improving motor skills of such populations.

Consequently, exercise through traditional dance programs should be an integral part of PE lessons applied with simple processes on participants with ID and without the requirement of particular equipment. As a music kinetic activity, traditional dances have indeed the potential to provide social, emotional and cognitive interaction that has a direct positive effect on their quality of life and successful performance of basic motor skills.

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