

# EFFECTS OF BODANZA® SRT ON MOTOR, COGNITIVE AND BEHAVIOURAL PARAMETERS OF PATIENTS WITH PARKINSON'S DISEASE: A THREE-DIMENSIONAL MOTION ANALYSIS (3D-MA) STUDY

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## Introduction

Emerging evidence suggests that therapeutic dance may be an appropriate form of physical activity for some individuals with PD. In fact, the basal ganglia may be selectively activated during rhythmic activities which may improve motor control.

Rolando Toro's Biodanza (SRT) is a therapeutic strategy of human development and growth that integrates movement, music and emotions to induce motor, relational and affective experiences.

The aim of the present study was to determine the effects of a 3-month SRT intervention on motor, cognitive and behavioural parameters of patients with Parkinson's disease (PD) by using a 3D-MA approach.

## Patients and Methods

16 PD patients, without dementia as defined by DSM-IV, were enrolled. All the patients underwent a neurological examination consisting of the motor section of the Unified Parkinson Disease Rating Scale (UPDRS-III) and Hoehn and Yahr; a neuropsychological battery consisting of Parkinson's Disease-Cognitive Rating Scale (PD-CRS), the Self-Report Version of the Apathy Evaluation Scale and the Hamilton Depression Rating Scale-17, were also performed.

Gait parameters were collected using an 8-camera system (Qualysis®) at 120 Hz and the following were analyzed: speed, stride width, stride length, cycle time, step length, step time, double limb support time, cadence, stance time, swing time, double/single limb support time ratio.

Moreover, we analyzed the range of motion in the sagittal plane of the thigh (T), knee (K), and ankle (A) joints, normalized for the 100% of the gait cycle calculating the  $\Delta$ s value as the difference between two consecutive peaks in the gait cycle.

After basal evaluation the study group attended 2-h SRT classes once a week, completing 12 lessons in 12 weeks.

Neurological, neuropsychological and gait parameters were evaluated at study entry (t0) and at 12 weeks (t1, end of dancing training).

## Results

At t1 a significant improvement in both spatiotemporal and kinematic gait parameters and UPDRS-III scores was observed in all treated patients as compared with baseline.

All examined spatiotemporal parameters showed a significant improvement with the exception of stride width. As for kinematic parameters a significant improvement of  $\Delta$ A<sub>c</sub> and  $\Delta$ A<sub>d</sub>,  $\Delta$ K<sub>b</sub>,  $\Delta$ T<sub>b</sub> and  $\Delta$ T<sub>c</sub> was recorded at the end of treatment period.

As for neuropsychological parameters, there was a significant increase in performance on verbal delayed recall of PD-CRS; moreover, a reduction of cognitive apathy was found with a trend towards significance.

## Discussion

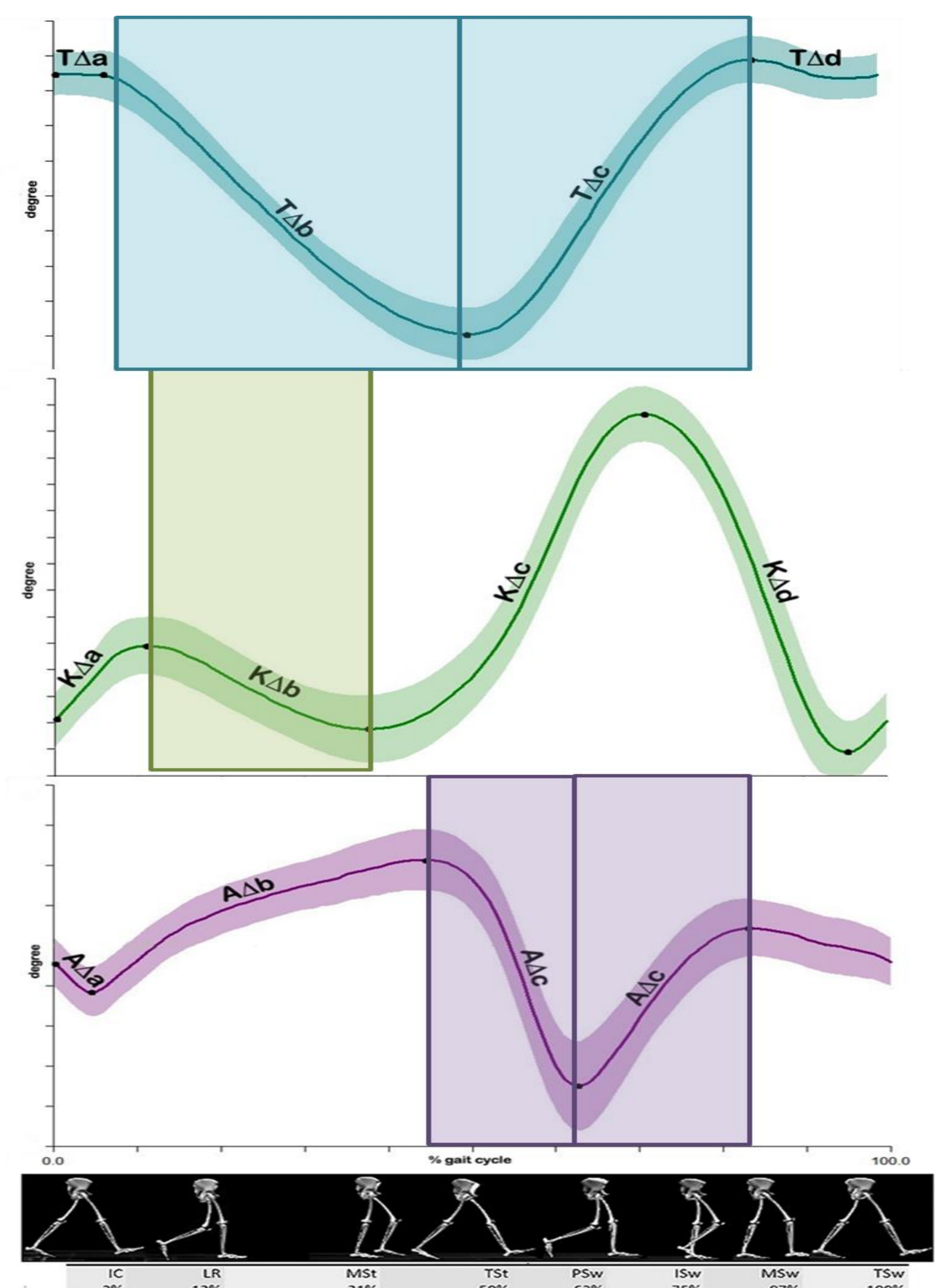
A 3-month SRT intervention significantly ameliorate gait parameters of PD patients with a parallel improvement in clinical status.

The results also show that the SRT intervention may be, in the short term, a very helpful resource for the management of PD.



Fig.1 – On the top, a marked PD patient and his skeletal model used for the 3D-MA. On the lower, the study group during a Biodanza SRT session.

Fig.2 – The traces of the normal kinematic curves and the  $\Delta$ 's, in the related gait cycle phases, improved after the 3-month SRT.



## References

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