

PHYSIOLOG MOTION SYSTEM BLUETOOTH WOBBLEBOARD STUDY OF NORMAL ANKLE PROPRIOCEPTION

INTRODUCTION

A sample of 326 asymptomatic individuals was assessed using the PhysioLog Motion System as a measurement device to determine normal foot and ankle proprioception values.

METHOD

CRITERIA FOR INCLUSION INTO THE STUDY

Lower limbs and feet that demonstrated:

- 1) no acute injury within the last 12 months
- 2) no chronic pain
- 3) no structural deformities
- 4) no previous surgery
- 5) no disease process that may affect motor control of the lower limbs

TEST DESIGN

A physiotherapy outpatient clinic screened 326 individuals with the PhysioLog Motion System as a measurement device to determine normal foot and ankle proprioception values. Subjects were aged between 15 and 63 years.

Measurements were taken for single leg stance on both right and left legs as well as double leg stance. The measures were taken over 30 seconds with and without visual feedback.

The PhysioLog Motion System was set up on a horizontal wooden plate with foam of a known density surrounding the wobble board dome to enable all study participants the opportunity to complete the required six measurements successfully. The use of the wobble board without additional stabilising foam was not achievable for most participants.

Subjects were chosen randomly from clients attending the clinic over a six-month period. The test procedure was carried out by one investigator to minimise inter-tester reliability discrepancies.

Six measures were taken from each of the clients in the study:

- 1) 30 seconds static balance on the left foot on the wobble board with visual feedback
- 2) 30 seconds static balance on the right foot on the wobble board with visual feedback
- 3) 30 seconds static balance on both feet on the wobble board with visual feedback
- 4) 30 seconds static balance on the left foot on the wobble board without visual feedback
- 5) 30 seconds static balance on the right foot on the wobble board without visual feedback
- 6) 30 seconds static balance on both feet on the wobble board without visual feedback

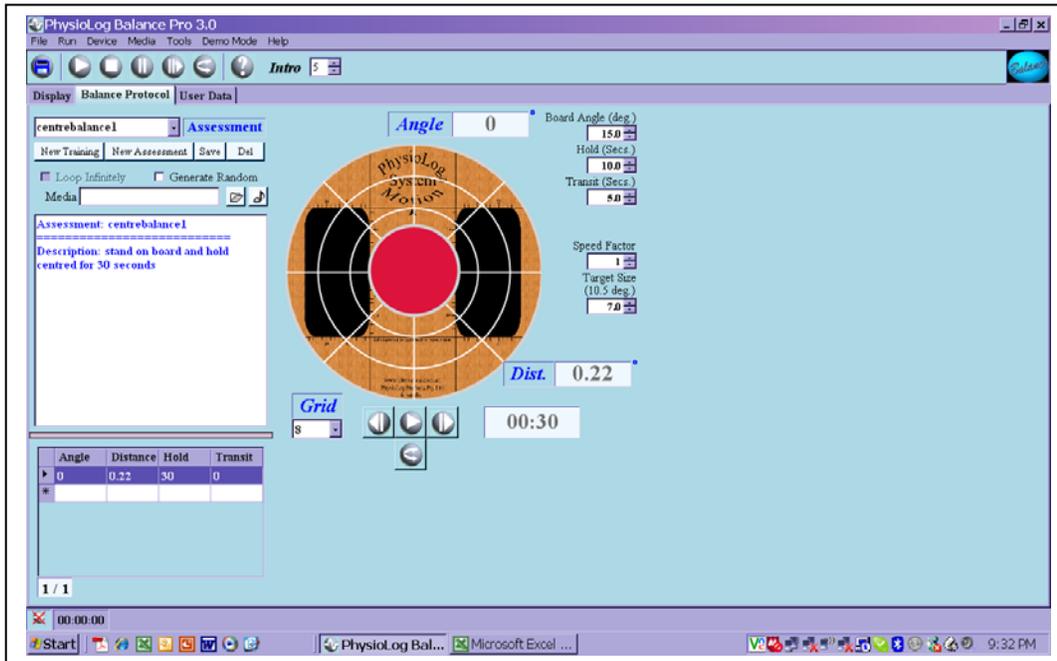
A test protocol called “centre balance” was created to specifically cater for this study. The settings of the PhysioLog Balance Pro software are pictured below. All tests were carried out in the order as listed directly above this paragraph.

RESULTS

Results of the six measures on each subject were collated into measurement type groups. Each group was then averaged and the numbers recorded as tabulated below.

	Ave Distance	Distance SD	Ave Distance X	Ave Distance Y	
LEFT FOOT	3.17	1.25	-2.06	0.66	NO VISUAL FB
RIGHT FOOT	2.70	1.38	0.83	1.66	NO VISUAL FB
BOTH FEET	3.57	1.80	1.67	-1.90	NO VISUAL FB
LEFT FOOT	2.11	1.49	-0.15	-0.14	VISUAL FB
RIGHT FOOT	2.00	1.77	1.19	-0.31	VISUAL FB
BOTH FEET	2.55	1.87	1.14	-0.54	VISUAL FB

“PhysioLog Balance Pro” SETTINGS



DISCUSSION

The values acquired from this study can be used as windows or corridors of normal foot and ankle proprioception measures. These measures can be used as guidelines in restorative rehabilitation and performance training of clients.

It is interesting to note that visual feedback enhances performance measures.

The left foot performed worse across the study population than the right foot. The incidence of hand dominance was 1/10th of the population tested.

The values for two-leg stance were worse than for single leg stance.

Objective static balance measures are important but further work is required to develop objective dynamic measurement values as well.

Mr Bill McTigue
BScBAppSc (Physiotherapy)
M Health / Mentone Physiotherapy Principal
billm@mhealth.com.au