

**THE EFFECT OF VISUAL SCANNING EXERCISES
INTEGRATED INTO TASK-SPECIFIC ACTIVITIES ON THE
FUNCTIONAL ABILITY IN PATIENTS WITH VISUAL
PERCEPTUAL DISORDERS POST STROKE**

By

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Submitted as requirement for the degree

MPHYST

In the

FACULTY OF HEALTH SCIENCES

UNIVERSITY OF PRETORIA

PRETORIA

2013

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STATEMENT

I Andoret van Wyk, declare that the dissertation which I hereby submit for the degree M PhysT at the University of Pretoria, is my own work and has not been previously submitted by me for a degree at another tertiary institution.

Where secondary material has been used, this has been carefully acknowledged and referenced in accordance with the university requirements. I am aware of university policies and implications regarding plagiarism.

Q van Wyk

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Date



LANGUAGE EDITORS LETTER

wordsm,ths
english consultancy

TO WHOM IT MAY CONCERN

Andoret van Wyk's MPhYST dissertation has been proofread by me. Changes were made to a hard-copy version of the dissertation and the student herself applied the changes to the version of the dissertation intended for submission to the University of Pretoria.

Barbara English

7 May 2012

EXPRESSION OF THANKS

I would like to sincerely thank Dr Eksteen for her dedication and continued support throughout the study. I have learned so much during the whole process and am incredibly thankful for her dedication and sharing of her knowledge.

A very special thank you to Wessel and my whole family for their continued motivation throughout the study.

I would like to thank the Medical Research Council of South Africa for the grant received to conduct the study.

Thank you to Professor Paul Rheeder for the detailed analysis of my statistics for this study.

I would like to thank Mrs Barbara English for the language editing of the dissertation.

Last, but not the least, thank you to all the research assistants that assisted me throughout the study. Without you, the study would not have been possible.

ABSTRACT

Stroke is the first cause of disability and second most frequent cause of mortality after ischemic heart disease in adults worldwide. The influence of visual system impairment on the patient's functional ability and quality of life are still largely neglected in neurological rehabilitation. Therapists are seldom concerned with the visual status and ability of their patients. Members of the rehabilitation team rarely assess, monitor or treat impairment of visual efficiency processes and visual information processing dysfunction that may be observed in patients after a stroke. In the absence of specific intervention visual deficits stabilise and become permanent due to poor or almost absent spontaneous recovery of the visual system in stroke patients.

A matched-pair randomised controlled trial was conducted. Twenty-four (24) participants were screened based on their functional activity level as measured on the Stroke Activity Scale (SAS). When a participant's SAS score matched a previously allocated participant's score, that particular participant was placed in the opposite group from the existing matched participant. If the newly assessed participant's SAS did not match another participant's SAS, the participant was randomly allocated to either the experimental or the control group. The process was repeated until (24) patients had been allocated into two groups consisting of twelve (12) participants per group as they were admitted to Tshwane Rehabilitation Centre (TRC).

Group 1 (Experimental Group) received saccadic eye movement training with visual scanning exercises integrated with task-specific activities and Group 2 (Control Group) received task-specific activities for four (4) consecutive weeks. Participants'

functional progress on body impairment and functional activity level were assessed and documented on a weekly basis during the intervention period of four (4) weeks. In order to determine whether the integration of visual scanning through saccadic eye movement training had a permanent or long-term effect on the participants' functional ability and quality of life after rehabilitation had been terminated, functional progress on body impairment-, functional activity and participation levels as well as their perceived quality of life were assessed and documented eight (8), twelve (12), sixteen (16) and twenty (20) weeks after admission to the rehabilitation facility. A large number of participants were lost to follow-up following discharge from the TRC after the intervention period of four (4) weeks. As result of the small sample group at week eight (8), week twelve (12), week sixteen (16) and week twenty (20), these results were not discussed.

Results of the matched-pair randomised controlled trial indicated that the effect of saccadic eye movement training with visual scanning exercises integrated with task specific activities as an intervention for participants that presented with unilateral spatial inattention, visual-spatial disorders and visual-constructive disorders post-stroke resulted in significant improvement in impairment level. This improvement related to oculomotor visual performance, visual attention, depression as well as results on functional activity level with regard to the ability to independently complete ADL after four (4) weeks of rehabilitation.

It may therefore be concluded that saccadic eye movement training with visual scanning exercises integrated with task-specific activities as an intervention tend to

improve functional ability in participants that presented with unilateral spatial inattention, visual-spatial disorders and visual-constructive disorders post-stroke.

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ABBREVIATIONS

ADL	Activities of daily living
aekde1	The average number of errors made during the completion of the King-Devick Subtest 1
aekde2	The average number of errors made during the completion of the King-Devick Subtest 2
aekde3	The average number of errors made during the completion of the King-Devick Subtest 3
AHA / ASA	American Heart Association and American Stroke Association
ANCOVA	Analysis of Covariance
AHCPR	United States Agency for Health Care Policy and Research
BADL	Basic activities of daily living
BDI	Beck Depression Inventory
BI	Barthel Index
BIT	Behavioural Inattention Test
CNS	Central Nervous System
CVI	Cerebral vascular incident
EST	Explorative saccade training
FARS	Functional Autonomy Rating Scale
FIM	Functional Independence Measurement
fMRI	Functional Magnetic Resonance Imaging
FT	Flicker-stimulation training
HADS	Hospital Anxiety and Depression Scale
HADSA	Anxiety subscale
HADSD	Depression subscale
HIV	Human Immunodeficiency Virus
HRP	High-resolution perimetry

HVFDs	Homonymous visual field defects
IADL	Instrumental activities of daily living
ICC	Intraclass correlation coefficients
ICF	International Classification of Functioning, Disability and Health
kde1	King-Devick Subtest 1
kde2	King-Devick Subtest 2
kde3	King-Devick Subtest 3
MAACL	Multiple Affect Adjective Checklist
MADRS	Montgomery Asberg Depression Rating Scale
MAT	Modified Metropolitan Achievement Test
MMAS	Modified Motor Assessment Scale
MMS	Mini-Mental Status
MMSE	Mini-Mental State Examination
PPC	Posterior Parietal Cortex
RCT	Randomised controlled trial
SAS	Stroke Activity Scale
SC	Superior colliculus
SD	Standard Deviation
SIS	Stroke Impact Scale Version 3.0
starcorrect	Results of the correct number of stars “cancelled” during the completion of the Star Cancellation Test
startime	Results of the time taken to complete the Star Cancellation Test
TRC	Tshwane Rehabilitation Centre
TUG	Timed Up and Go Test
UP	University of Pretoria
UNS	Unilateral Neglect Syndrome
USI	Unilateral Spatial Inattention

USN	Unilateral Spatial Neglect
V1	Primary visual cortex
VCR	Vestibulocollic Reflex
VOR	Vestibulo-ocular Reflex
VRT	Vision Restoration Training
VS	Visual search
VSR	Vestibulospinal Reflex
TNR	Tonic Neck Reflex
WAIS	Wechsler Adult Intelligence Scale
WHO	World Health Organization
WRAT	Wide Range Reading Achievement Test