The Computer Rod and Frame (CRAF) Test for the perception of visual vertical and horizontal as a predictor of mobility recovery following stroke.

Background to Research:
Strokes are frequently accompanied by paralysis of sufficient severity to prevent patients walking and maintaining balance. In some cases the subject loses all awareness of one side of the body. It has been demonstrated that many stroke victims show a distorted perception of vertical as demonstrated by the Rod and Frame test\(^1\),\(^2\), and it is possible that this may contribute to difficulties in balance when attempting to walk. The Rod and Frame test used in these early investigations was a cumbersome mechanical device requiring specialist laboratory facilities. At the AECC a computer-based Rod and Frame (CRAF) system has been developed which is readily portable, can be used in a clinical environment, and is easy to administer\(^3\),\(^4\).

Research aims:
The aim of this investigation will be to investigate if stroke patients show deficits in their perception of visual vertical and horizontal as measured using the CRAF Test, and if this can be used as a predictor of their future recovery of walking.

Expected outcomes:
1. A measure of the errors made in assessing visual vertical and horizontal in non-ambulatory stroke patients compared to a matched group of control subjects.
2. To investigate if there is a correlation between the level of disability and errors in visual vertical and horizontal perception in the stroke patients.
3. To follow the stroke patients at 3 monthly intervals over the 2 years following their stroke to determine if there is a correlation between the perceptual errors recorded by the CRAF, and the level of disability.
4. To determine if the immediately post-stroke CRAF errors can be used as a predictor of subsequent recovery of walking skills.

Methods:
1. A group of 100 non-ambulatory stroke patients will be tested for their performance on the CRAF test for their accuracy in making alignments in both vertical and horizontal planes. In each case an error measurement (degrees) will be obtained, and compared to similar values obtained from an age and gender matched group of control subjects.
2. Disability scores will be obtained for each patient using an appropriate system.
3. The stroke patients will subsequently be tested both for performance on the CRAF test, and for disability levels, at 3 monthly intervals over the 2 years following their stroke. There will be no interference with their medical / rehabilitation programmes.

Clinical applications:
The CRAF test is rapid and easy to administer in a clinical setting. If it can be demonstrated to correlate with the level of disability, or to be able to predict future recovery patterns, it would provide a valuable tool for monitoring patient progress, and be useful in comparing the efficacy of different treatment and rehabilitation schemes.

Outstanding Applicants:
Candidates will ideally have a first class honours degree or a Master’s degree in an appropriate subject. Those with interest and/or background in disability, stroke or perceptual biology will merit special consideration.

Supervisory Team:
Prof. J Bagust (AECC)
Prof. A Khattab (IHCS)
Dr. S Docherty (AECC)
Dr. D Jenkinson (RBH)

Research Environment:
The Biomedical Research and Clinical Applications Group encompasses a broad range of Health and Biological Sciences disciplines. The group engages in original and applied research in biomedical and clinical areas, working on the cellular and molecular basis of human disease. It collaborates with local Hospitals and other Universities and participates in the wider University multidisciplinary research programmes. The Institute's research strategy is built on a commitment to real world research that is transferable across a variety of contexts. It has considerable expertise in research approaches and programmes that aim to improve the everyday lives of health and social care users. There are currently 14 full-time and 40 part-time PhD students at IHCS.

Informal Enquiries:
Prof. A Khattab: akhattab@bournemouth.ac.uk

How to apply:
http://www.bournemouth.ac.uk/research/studentships/how_to_apply.html

References: