

APERF GRANTS - Funding the future of podiatry



Case study – Validating the Foot Posture Index.

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By Anthony Redmond

“In October 1999, we applied for funding from APERF for assistance with a project relating to the ongoing validation of the new Foot Posture Index (the FPI).

Podiatrists might already be aware that the FPI is a new rating system for quantifying standing foot posture according to a number of criteria. It is a quick and convenient approach to defining foot motion and posture in all three planes and according to the functional segments of the foot.

The overall program of validation for the FPI has occurred in 7 stages over four years and has involved input from 5 universities, some 50 clinicians and about 12 research collaborators.

The first three stages had already been undertaken when we applied for assistance from APERF. By the fourth stage the complexity was increasing, and if we were to address the validation with appropriate rigour there was a real need for some funded help.

The aims of the project for which we applied for funding were:

1. To investigate the reliability of the FPI in the clinical situation
2. To assess the criterion validity of the FPI in relation to a benchmark assessment of foot posture.

APERF funding of slightly less than \$4000 came through at the end of 1999 and made an immediate difference to the project.

The important fourth stage, the concurrent validation, was to employ an ambitious three-dimensional reconstruction of the lower leg in 30 people. The 3D ‘virtual’ leg, which was to be the benchmark against which the performance of the FPI

could be gauged, was created by digitising 17 points between the knee and the first toe using a state-of-the-art electromagnetic tracking system. The relationship between the 17 points and the clinical FPI ratings could then be precisely tracked throughout ranges of pronation and supination.

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The APERF funding immediately assisted with the construction of a rig to calibrate the data collection protocol, with expert technical support and writing of tailored software, and most importantly it gave us the capacity to employ an independent measurer to ensure that the clinical ratings and the electromagnetic tracked data were free from any bias on the part of the research team. Later, the APERF grant also assisted with the costs for a substantial improvement in the reliability evaluation, the results of which have provided a good deal of insight into the clinical implementation of the FPI.

As a result, we have been able to attract another \$40,000 from a US research charity to continue the work initially supported by the APERF donations. Therefore, the FPI has become, by far, the best validated instrument for the assessment of foot posture. As the last of the seven stages draws to a close in the New Year, the FPI will have proven to be more robust than

any clinical measures we have to date, and we will know more about both the strengths and the weaknesses of this measure than we have ever done for an instrument for rating foot positions.

As a consequence of the rigorous validation and the clear data on its strengths and weaknesses, the FPI is currently being used by nearly twenty research teams on 4 continents. The data from existing studies have been written up for publications and presentations, including our own National Podiatry Conference in Canberra, a multi-disciplinary conference in the United States (published in the *Journal of Orthopaedic and Sports Physical Therapy*), and multiple papers to journals such as *The Journal of American Podiatric Medical Association*, and *Gait and Posture*.

Eventually and most significantly, other authors will publish many more papers using the FPI. These applied papers will give clinicians the information they need to evaluate and improve our treatments, and to enhance our understanding of the treatments we use.

Every single dollar that is given to APERF goes into conducting research of direct benefit to the profession. In the case of this project the APERF donations also seeded a much larger project grant, and really helped with the program as a whole. When the FPI gets rolled out internationally in the coming months, the valuable input of APERF will have been every bit as instrumental in the success of the project as any of the research team.”

APERF was established in 1990. To date, the foundation has supported numerous research projects into the causes, prevention and treatment of foot problems. To make a donation or find out more about grant criteria, please contact the APERF trustees on 03 9416 3111 or visit www.apodc.com.au/apodc/aperf.htm