



Edinburgh University Student SSC/Project Report

Supervisor and position	Mr J E Robb, Consultant Orthopaedic Surgeon
Contact details of your supervisor	James.Robb@luht.scot.nhs.uk
Hospital/unit/clinic	RHSC & The Anderson Gait Laboratory at the Astley Ainslie Hospital
Topic (rough topic area, e.g. Orthopaedics)	Paediatric Orthopaedics & Gait Analysis
Title of Project	The effect of ankle foot orthoses on moments about the knee in diplegic cerebral palsy.
Authors	Rebecca Taylor, Gail Rose, James Robb, Richard Ferguson
Please give an overview of what your research was on(200 words max)	<p>The Anderson Gait Laboratory has been assisting in the management of gait problems in children with cerebral palsy for over 10 years. James Robb and Gail Rose have sought to review a large proportion of this data through her PhD and several student projects which have focussed on the pathological progression of gait in untreated children, and the change in kinematic parameters of the lower limbs with AFO use.</p> <p>Data collection thus far has reflected the fact that gait analysis in CP tends to focus on kinematic data in attempting to understand pathological gait. However, it is the kinetic data (moments and powers) that by predicting the forces that produce movement through processing the ground reaction force, can provide clues to the underlying cause of the pathological movement.</p>

	<p>The aim of this study was therefore to assess the effect of ankle-foot orthoses (AFOs) on external moments at the knee in children with diplegic cerebral palsy who walk with a Crouch Gait. By investigating this area we hoped to gain further understanding of the way in which external forces affect the efficacy of AFOs and whether they might aid clinicians in determining optimal AFO prescriptions.</p>
<p>What were the best things about the project? (150 words max]</p>	<p>If anyone had told me a year ago that I would be I would be working with a bioengineer, I would never have believed them! However, without doubt, one of the most rewarding aspects of this project has working with Gail Rose (a Bioengineer!) who along with Mr Robb, guided me through this “crash course” in bioengineering. I think it is important for medical students to realise that there is a multitude of staff who work for the NHS in very varied occupations. I thoroughly enjoyed working and meeting with the staff at the Astley Ainslie and I learnt a great deal from them.</p> <p>Working with Mr Robb I was also able to scrub in on a number of surgeries. It was extremely interesting to attend one of the operations performed to lengthen contractures in CP children, and it greatly aided my understanding of the gait problems that these children can experience.</p>
<p>What problems did you encounter? (150 words max)</p>	<p>It would be true to say that at the start of the study I was slightly overwhelmed by the complexity of the data analysis. Having studied neither physics nor mathematics for A-Level, I found some of the theoretical concepts difficult to grasp and struggled to visualise a number of the kinetic parameters.</p> <p>However, after seeing gait lab sessions in action I began to understand how the myriad of numbers of the computer screen applied to patients and it was extremely satisfying to finally be able to write 3,000 words on a field of which I had absolutely no prior knowledge.</p>

	This is all down to the fantastic support I received from Gail Rose and Mr Robb and I can only recommend having two (!) project supervisors to hand!
Techniques used in the project (in brief. Only really relevant if lab project, e.g. Western blotting, PCR, audit...)	Vicon Gait Analysis Software.
Give details of any Surgical Experience you have gained	As previously mentioned, Mr Robb is happy to let you come along and scrub in whenever you feel you're missing hospital life! I was able to see a variety of paediatric orthopaedic procedures and this certainly made my project even more enjoyable!
Details of any presentations or publications to arise from this project	Presentations (including posters) The intention is to submit the paper to the European Society for Movement Analysis in Adults and Children in the Autumn of 2009.
	Publications (including Abstracts) See above.
Your name:	Rebecca Taylor
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Thank you for taking the time to fill the above form in. Please feel free to leave boxes blank if you want. The report will be uploaded onto the website in pdf form. Also, please feel free to submit more than one report!

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On behalf of the ESSS Committee

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