

## Research Profile

**Dr Roozbeh Naemi** BSc, MSc, PhD

Associate Professor of Biomechanics at Staffordshire University

### Refereed articles in Academic Journals

#### Clinical Biomechanics strand

- Chatzistergos, P. E., **Naemi, R.**, Sundar, L., Ramachandran, A., & Chockalingam, N. (2014). The relationship between the mechanical properties of heel-pad and common clinical measures associated with foot ulcers in patients with diabetes. *Journal of diabetes and its complications*, 28 (4): 488-493.
- Healy A, **Naemi, R.**, & Chockalingam N. (2014). The effectiveness of footwear and other removable off-loading devices in the treatment of diabetic foot ulcers or the alteration of biomechanical factors associated with ulcer healing: a systematic review. *Current Diabetes Reviews*, 10(4): 215-230.
- Chatzistergos, P. E., **Naemi, R.**, & Chockalingam, N. (2014). An MRI compatible loading device for the reconstruction of clinically relevant plantar pressure distributions and loading scenarios of the forefoot. *Medical engineering & physics* 36(9), 1205-1211.
- Błażkiewicz M, Sundar L, Healy A, Ramachandran A, Chockalingam N and **Naemi R.** (2014). Assessment of lower leg muscle force distribution during isometric ankle dorsi and plantar flexion in patients with diabetes: a preliminary investigation. in press. *Journal of Diabetes and Its Complications*.
- Deshpande R, Elagiri Ramalingam R, Chockalingam N and **Naemi R** (2014). 3D Reconstruction for 2D Spinal Ultrasound Imaging: An Overview, *International Journal of Applied Engineering Research*, 9(12):1829-1840.
- Healy A, **Naemi R.**, & Chockalingam N. (2013). The effectiveness of footwear as an intervention to prevent or to reduce biomechanical risk factors associated with diabetic foot ulceration: a systematic review. *Journal of Diabetes and Its Complications* 27: 391–400
- **Naemi R.** and N Chockalingam (2013). Mathematical models to assess Foot-Ground interaction- An overview. *Medicine and Science in Sport and Exercise* 45(8) 1524-33.
- **Naemi, R.**, Healy, A., Sundar, L., Ramachandran, A., & Chockalingam, N. (2013). A Combined Technique for Randomisation of a Small Number of Participants with a Variety of Covariates into Treatment and Control Groups in Randomised Controlled Trials. *Journal of Clinical Trials*.
- **Naemi R.** and N Chockalingam (2012). Development of a method for quantifying the midsole reaction model parameters, *Computer Methods In Biomechanics and Biomedical Engineering*, DOI:10.1080/10255842.2012.666795- 2012
- **Naemi, R.**, Healy,A., Chockalingam,N. Larose Chevalier,T. (2012). The effect of the use of a walkway and the choice of the foot on plantar pressure assessment when using pressure platforms, *The Foot*, 22(2): 100-104
- Needham R, Chockalingam N, & **Naemi R.** (2014). Quantifying lumbar-pelvis coordination during gait using a modified vector coding technique. *Journal of Biomechanics* 47, 1020-1026.

- Needham R, Chockalingam N, **Naemi R**, Shannon T, Healy A (2012) Validation of a multi-segment spinal model for kinematic analysis and a comparison of different data processing techniques. *Stud Health Technol Inform.* 176:151-4.
- Johnson, S., Branthwaite, H. R., **Naemi, R.**, & Chockalingam, N. (2012). The effect of three different toe props on plantar pressure and patient comfort. *Journal of Foot and Ankle Research*, 5(1), 22.
- Burn, H., Branthwaite H., Chockalingam, N., Larose Chevalier T. and **Naemi R.** (2011). Do foot orthoses replicate the static longitudinal arch angle during midstance in walking? *The Foot*, 21(3), 129-132.
- Healy A, Burgess-Walker P, **Naemi R.**, Chockalingam N (2011) Repeatability of WalkinSense<sup>®</sup> in shoe pressure measurement system: A preliminary study, *The Foot*, Volume 22, Issue 1, 35-39

### **Sport and Exercise Biomechanics strand**

- Sinclair J, **Naemi R**, Chockalingam, N & Greenhalgh A (2014). Investigation into the kinetics and kinematics during running in the heelless shoe. *Footwear Science*, DOI:10.1080/19424280.2014.889221
- Sinclair J, Franks C, Fau-Goodwin J, **Naemi R** & Chockalingam, N (2014). Influence of footwear designed to boost energy return on the kinetics and kinematics of running compared to conventional running shoes. Accepted for publication in *Comparative Exercise Physiology*.
- Thow, JL **Naemi, R** and Sanders RH (2012). Comparison of modes of feedback on glide performance in swimming. *Journal of Sports Sciences*, 30(1) 43-52.
- **Naemi R**, Psycharakis SG, McCabe C, Connaboy C, Sanders RH (2011) Relationships Between Glide Efficiency and Swimmers' Size and Shape Characteristics. *Journal of Applied Biomechanics*. 28(4):400
- **Naemi, R.**, Easson, W.J., and Sanders, R. H., (2010). Hydrodynamic Glide Efficiency in Swimming. A review. *Journal of Science and Medicine in Sport*. Vol: 13(4) 444 -8
- Psycharakis, S.G., **Naemi, R.**, Connaboy, C., McCabe, C. & Sanders, R.H., (2010). Three dimensional analysis of intracycle velocity fluctuations in frontcrawl swimming. *Scandinavian Journal of Medicine & Science in Sport*. 20-128-135
- **Naemi, R.** and Sanders, R. H. (2008). A 'hydro-kinematic' method of measuring glide efficiency of a human swimmer. *Journal of Biomechanical Engineering*, 130(6) 9-16.
- Sanders, R. H., Psycharakis, S.G., McCabe, C., **Naemi, R.**, Connaboy, C., Li, S., Scott, G. and Spence, A. (2006). Analysis of swimming technique: state of the art; applications and implications. *Portuguese Journal of Sports Sciences*, 6 (2): 20-24

### **Invited Lectures**

- **Naemi R.** (2014) The foot in diabetes: biomechanics and pressure distribution. Presented at The foot in diabetes – rehabilitation and prosthetic and orthotic management seminar organized by the International Society of Prosthetics and Orthotics, Oslo, Norway 18<sup>th</sup> September 2014
- **Naemi R.** (2011) Mathematical modelling to help design custom shoe soles and insoles. Presented at the Orthotic Technology Forum, University of Bath, 19 - 20 May 2012

- **Naemi R.** (2010) Modelling in lower extremity biomechanics, applications and challenges. Presented at the 21<sup>st</sup> Century Biomechanics, Langer Summer School, RX Laboratories 30<sup>th</sup> & 31<sup>st</sup> July 2010 , Wooldland Grange, Leamington Spa
- **Naemi, R.** (2010). Mathematical modelling and its influence on footwear sole unit design. Presented at the 8<sup>th</sup> Staffordshire Clinical Biomechanics conference, 16-17 April 2010

#### Refereed and published conference proceedings

- Chatzistergos P., **Naemi R.**, Chockalingam N. (2014). Patient-Specific Optimization of Insole Material Properties: A Pilot Study. Proceedings of the 1st International Conference on Engineering and Applied Sciences Optimization, M.G. Karlaftis, N.D. Lagaros, M. Papadrakakis (Eds.), p.p. 2498, Kos Island, Greece, 4- 6 June 2014
- Healy A., **Naemi R.**, Revathi T., Sundar L., Chockalingam N., Pillai A., Greenhalgh A, Snehalatha C., Ramachandran A. (2014). Is there a difference in peak plantar pressures during walking in people with diabetes who have varying foot types, *Diabetic Medicine*, 31 (Suppl.1), P60.
- **Naemi, R.**, Healy A., Chockalingam N, Sundar L, Pillai A, Seeli Abraham C, Snehalatha C, Ramachandran A (2013). The contribution of visual feedback to balance in people with Type 2 diabetes and neuropathy, *Diabetic Medicine*, 30 (Suppl.1), P139.
- **Naemi, R.**, Gerth, P., Deeney, P., Healy, A., Chockalingam, N., & Schulz, J. (2013). The effect of temperature on the rebound characteristics of material combinations commonly used in diabetic insoles. *Footwear Science*, 5(sup1), S91-S93.
- Healy, A. Healy, A., Chatzistergos, P., Needham, R., **Naemi, R.**, & Chockalingam, N. (2013). Comparison of design features in diabetic footwear and their effect on plantar pressure. *Footwear Science*, 5(sup1), S67-S69.
- **Naemi, R.**, Healy, A., Dunning, D., Ashford, R. L., Chatzistergos, P., & Chockalingam, N. (2013). Peak and average pressure correlations and their ratio at different plantar regions of the foot. *Footwear Science*, 5(sup1), S96-S98.
- Needham R, Chockalingam N, Dunning D, **Naemi R**, Healy A (2013). The effects of leg length discrepancy on inter-segmental coordination between the spine and pelvis during gait: A dynamical systems approach. Proceedings of the 24th Congress of the International Society of Biomechanics, Natal, Brazil.
- Deshpande, R., Elagiri Ramalingam R., Chockalingam R. , **Naemi R** , Helen Branthwaite H , Sundar L. (2013). An Automated Segmentation Technique for the Processing of Foot Ultrasound Images Presented at IEEE Eighth International Conference on Intelligent Sensors, Sensor Networks and Information Processing.
- **Naemi, R.** and Chockalingam, N. (2010). Hard Sole or Soft Sole, A study into the shoe-specific ground reaction model parameters. Poster presented at the 2<sup>nd</sup> IFab conference in Seattle, University of Washington, 16-18 Sep 2010
- **Naemi, R.**, Alonso,A., Chockalingam,N., Larose Chevalier,T. (2009). Effects of walkway inclusion in pressure platform assessment, *Footwear Science*, Vol1, Supp 1, 23-24
- **Naemi, R.**, Aritan, S. Goodwill, S., Haake, S., and Sanders, R. (2008). Development of Immediate Feedback Software for Optimising Glide Performance and Time of

Initiating Post-Glide Actions. In Engineering of Sport 7, Vol.1, Proceeding of the 7<sup>TH</sup> International Sports Engineering Conference, Ed. Estivalet M. and Brisson P., pp. 291-300, Biarritz, France, 2-6 June 2008.

- Connaboy, C., Coleman, S., McCabe, C., **Naemi, R.**, Psycharakis, S., & Sanders, R. (2007). Tadpole, trout or tuna: the equivalence of animal and human aquatic undulatory locomotion. In proceedings of XXV International Symposium on Biomechanics in Sports, Ed. Menzel, H.-J. Chagas M. H. pp.75-78, Ouro Preto - Brazil, August 23 - 27, 2007
- **Naemi, R.** and Sanders, R.H., (2004). A Comparison of Two Functions Representing Velocity of a Human Body Subject to Passive Drag. In Proceedings of XXII International Symposium on Biomechanics in Sports, Ed. Lamontagne, M; Gordon, D., Roberstson, E. and Sveistrup, H., pp. 430-433, Ottawa, Canada, 9-12 Aug 2004.
- Shahbazi-Moghaddam, M., Sanders, R.H. and **Naemi, R.**, (2004). A simple Mathematical Modeling for Kinematic and Dynamic Studies of Swim Turn Performance. In Proceedings of XXII International Symposium on Biomechanics in Sports, Ed. Lamontagne, M; Gordon, D; Roberstson, E and Sveistrup, H., pp.229-232, Ottawa, Canada, 9-12 Aug 2004.
- **Naemi, R.**, Arshi, A.R., Ahadian, A., & Barjasteh, B., (2001). 3D Kinematic and Kinetic Analysis of Two Methods for Grab Start Technique in Swimming. In Proceedings of XIX International Symposium on Biomechanics in Sports, Ed. Blackwell, J., pp. 96-99, San Francisco, California, 20-26 June 2001.

#### **Peer reviewed conference presentations**

- **Naemi R**, Linyard-tough K, Healy A, Chockalingam N. (2014). Efficacy of a slow recovery insole in reducing plantar pressure during walking gait. Presented at XIX International Conference on Mechanics in medicine and Biology, Bologna, 3-5 Sep 2014.
- Chatzistergos, P., **Naemi, R.**, Sundar, L., Chockalingam, N. (2014) High values of fasting blood sugar are linked to the degradation of the mechanical behaviour of plantar soft tissues: An in-vivo experimental study 40th PanHellenic Medical conference 15-17 May, Athens, Greece
- Hill M, **Naemi R**, Branthwaite H and Chockalingam N. The Relationship of Arch Height to Foot Length, Possible Implications for Shoe Design, Presented at the 12th Staffordshire Clinical Biomechanics Conference, 1-3 May 2014. Stoke on Trent, UK
- Linyard-tough K, **Naemi R**, Healy A, Chockalingam N. (2014). Influence of variation of insole material characteristics on plantar pressure during walking, Presented at the 12<sup>th</sup> Staffordshire Clinical Biomechanics Conference, 1-3 May 2014, Stoke on Trent, UK
- Healy A., **Naemi R.**, Revathi T., Sundar L., Chockalingam N., Pillai A., Greenhalgh A, Snehaltha C., Ramachandran A. Is there a difference in peak plantar pressures during walking in people with diabetes who have varying foot types, Presented at Diabetes UK Professional Conference, 5-7 March, 2014, ACC, Liverpool, UK.
- Chockalingam N., **Naemi R**, Healy A, Sundar L, Chatzistergos, P. (2013). *DiabSmart*, An integrated system for assessment of biomechanical risk factors in Diabetic foot. Presented at the 11th Staffordshire Clinical Biomechanics Conference, 26-27 April 2013, Stoke on Trent, UK

- Healy, A., **Naemi, R.**, Sundar, L., Chockalingam, N., Revathi, T., Seeli Abraham, C., Snehalatha, C. and Ramachandran, A. (2013) Validity of the paper grip test to assess muscle strength in people with Type 2 diabetes. Presented to the Diabetes Foot Study Group 11th Scientific Meeting 20th -23rd September, Sitges, Spain.
- **Naemi, R.**, Healy A., Chockalingam N, Sundar L, Pillai A, Seeli Abraham C, Snehalatha, Ramachandran A (2013). The contribution of visual feedback to balance in people with Type 2 diabetes and neuropathy, Presented at the Diabetes UK Professional Conference 2013, 13 – 15 March 2013, Manchester Central, Manchester.
- **Naemi R.** (2011) Sole Reaction Model; Heelless vs. Conventional Running Shoe. Presented at the 9<sup>th</sup> Staffordshire Clinical Biomechanics conference, 9-10 April 2011, Stoke on Trent, UK.
- Needham R., Chockalingam N., **Naemi, R.**, Dangerfield P. (2012).The effect of drop-foot on multi-segment foot kinematics: A dynamical systems approach to pathological gait analysis. Presented to the BACA Winter meeting, Chelmsford, UK.
- Hartveld A. and **Naemi R.** (2012). The influence of running shoe design towards a sub two hours marathon. Presented at the 10th Staffordshire Clinical Biomechanics conference, 20-21 April 2012, Stoke on Trent, UK.
- **Naemi R.** and Chockalingam ( 2011), Quantifying Sole-Specific Ground Reaction Model Parameters During Running Using A Parametric Surface Fitting Approach, Podium and poster presentation presented at the XXIII Congress of the International Society of Biomechanics, Brussels 3-7 July 2011
- Healy A., Dunning D., Chockalingam N., **Naemi R.** (2010) An investigation into the prescription procedures and material choice involved in the provision of bespoke foot orthoses for Diabetic patients. Presented to 8<sup>th</sup> Staffordshire conference on Clinical Biomechanics, Stoke on Trent, UK.
- **Naemi, R.** Chockalingam, N. Dunning D.N. and Chevalier T.L. (2009). A new method of measuring the mechanical properties of a shod foot during locomotion, Presented at the 7<sup>th</sup> Staffordshire Clinical Biomechanics conference, 17-18 April 2009
- **Naemi, R.** and Sanders, R.H., (2007). A new method of measuring glide efficiency in swimming, Poster Presentation at The BASES Annual Conference, University of Bath, 12-14 Sep 2007.
- Payton, C. J., **Naemi, R.**, Machtsiras, G. and Sanders, R. (2008). Isokinetic shoulder extension strength of trained female uni-lateral arm amputee swimmers. 16th FINA World Sports Medicine Congress, 7-8 April 2008, Manchester.
- Sanders R, Psycharakis SG, **Naemi R**, McCabe C. Advancing swimming technique with CARE. Medved V, Milanovic D, Prot F, editors. In: Proceedings of the 5th International Scientific Conference on Kinesiology. . Zagreb. 2008. p. 81-89.
- Sanders, R., **Naemi, R.**, McCabe, C. and Machtsiras, G. (2008). CAREing about Aquatics Research and Education. 1st SUSRAG Research Conference, 14 April 2008, Dundee.