



**Faculty of Computing, Health and Science
Level II Research Centre**

Centre for Exercise and Sports Science Research (CESSR)

ANNUAL REPORT 2010

BRIEF OVERVIEW

The Centre for Exercise and Sports Science Research (CESSR) was upgraded in 2007 from the Exercise and Sports Science Research Group (ESSRG) that was formed in 2000. Thus, this is the fourth annual report of the CESSR, in which showcases our research activities in 2010.

The members of the CESSR are consisted of all full-time academic staff and research students of the Exercise and Sports Science discipline in the School of Exercise, Biomedical and Health Sciences, and its adjunct members. It should be noted that members are changing every year. During 2010, we lost one active member; Associate Professor Angus Burnett who took a position in the Chinese University of Hong Kong, but he remains in the CESSR as an adjunct member. We welcomed two new members; Dr. Sophia Nimphius and Mr. Zane McDonald. We had 31 PhD (5 students started in 2010), 16 Masters by Research students (7 students started in 2010) in 2010. The number of new postgraduate students who started in 2010 was the largest since 2000. It should be noted that most of the postgraduate students made a good progress in 2010, and four PhD and two Masters by Research students completed in 2010.

The CESSR aims 1) to foster high quality research in exercise and sports science at ECU; 2) to promote and enhance the teaching of exercise and sports science at ECU; 3) to attract and support honours and postgraduate students; 4) to establish collaborative links with other research groups and institutes; 5) to attract research funding from competitive grant agencies and industry; and 6) to contribute to exercise and sports science needs at local, national and international levels. We achieved all of the aims in 2010, and had another successful year as detailed in this report.

Research conducted by the members of the CESSR continued to build during 2010. In 2010, the members of the CESSR (15 full-time academic staff at ECU, 3 adjunct members, 31 PhD and 16 Masters by Research students) obtained 10 external grants (Total amount: \$924,811), published 69 refereed journal articles, 1 book and 3 book chapters, made many presentations (data are not included), supervised 4 PhD and 3 Masters by Research students to completions, had several visiting research fellows and visitors, and engaged in community,

We were disappointed to see the ERA outcome based on our publications between 2003 and 2008 (ranked below national average). However, looking at the publications in 2010 in relation to the ERA journal ranking, we had 22 rank A* and 11 rank A publications, and had similar number of rank A* and A publications in 2009. So, we expect that the ERA outcome would be better in the next ERA round based on 2005-2010 publications. We have been striving to improve our research outcomes and achieve the aims at higher levels in 2011.

MEMBERSHIP

	Name	Position	Research Area
1	Professor Ken Nosaka	CESSR coordinator Postgraduate course coordinator	Exercise Physiology
2	Professor Rob Newton	Head of School	Biomechanics, Strength & Conditioning
3	Associate Professor Anthony Blazevich		Biomechanics
4	Associate Professor Angus Burnett	Moved to Chinese University of Hong Kong, Adjunct Associate Professor	Biomechanics
5	Associate Professor Daniel Galvão	Director of ECU Health and Wellness Institute	Clinical Physiology
6	Dr. Mike Newton	Masters of Exercise Science (Strength & Conditioning) course coordinator	Exercise Physiology
7	Dr. Greig Watson	Bachelor of Exercise and Rehabilitation course coordinator	Exercise Physiology
8	Dr. Chris Abbiss		Exercise Physiology
9	Dr. Jodie Cochrane		Motor Control, Biomechanics
10	Dr. Sophia Nimphius		Strength & Conditioning, Biomechanics
11	Dr. Nikola Medic		Sport Psychology
12	Dr. Prue Cormie	Postdoctoral fellow	Strength & Conditioning, Clinical Physiology
13	Ms. Kylie Cormack	Undergraduate Course Coordinator	Sports Performance, Dance
14	Ms. Fiona Iredale		Rehabilitation, Physiotherapy
15	Ms. Barbara Howard	Offshore (Singapore) Undergraduate Course Coordinator	Sport Sociology, Sport Psychology
16	Mr. Zane McDonald	Coordinator of Human Performance Centre	Testing and Evaluation of Athletes
17	Professor John Cronin	Adjunct Professor	Biomechanics
18	Professor Paul Laursen	Adjunct Professor	Exercise Physiology
19	Professor Mike McGuigan	Adjunct Professor	Strength & Conditioning, Exercise Physiology

*As shown in the table below (please see page 10), we had 31 PhD and 16 Masters by Research students as our members in 2010.

***Technical staff:** Nadija Vrdoljak, Jack Burns, Fiona Peacock

NEW GRANTS

External sources

1. Chambers S, Newton R, Galvão D. ProsCan For Life. Cancer Australia - Project Grant (\$590,000).
2. Cormie P. Mechanical specificity of weightlifting movements to athletic performance. National Strength and Conditioning Association, NSCA Foundation Young Investigator Grant (\$14,950 USD).
3. Cormie P, Galvão DA, Newton RU, Spry N, Joseph D. Feasibility and efficacy of resistance exercise in prostate cancer survivors with bone metastases. Early Career Investigator Research Grant. Funding Agency: Cancer Council of Western Australia (\$25,080).
4. Newton RU. Medical and Health Research Infrastructure Fund Round 14 - Western Australia Department of Health (\$23,013).
5. Newton RU, Hayes S, Galvão D, Taaffe D, Cornish B, Cormie P, Nosaka K. Efficacy and safety of high versus low intensity resistance exercise, with and without compression for management of lymphedema in breast cancer survivors. 2010 Cancer Council of Western Australia and Cancer Council Queensland - Project Grant (\$100,350).
6. Newton RU, Galvão D, Spry N, Joseph D, Prince R, Hayne D, Cormie P. 2010 Prostate Cancer Foundation of Australia - Equipment Grant. pQCT XCT 3000 Clinical (\$80,000).
7. Oosthuizen J, Mate J, Watson G, Cross M, Abbiss CR. Field validation of a laboratory developed heat stress intervention in the Australian liquid natural gas sector. Australia – China Natural Gas Technology Partnership Fund (\$59,210).
8. Peiffer JJ, Abbiss CR. Thermal monitoring program at the BHP Billiton Limited Whaleback Mountain mining project, Newman Western Australia. BHP Billiton Limited (\$10,285)
9. Pumpa K, Cormie P, Galvão DA, Newton RU. Exercise as medicine for the management of lymphoedema in breast cancer survivors. 2010 University of Canberra DVCR Research Grant (\$21,923).

Internal sources

1. Cormie P, Newton RU. Exercise as medicine for the management of lymphoedema in breast cancer survivors. 2010 Edith Cowan University - Early Career Research Grant (\$24,993).

PUBLICATIONS

Book

1. Blazevich AJ. Sports Biomechanics: The Basics. Optimising Human Movement (2nd edition). A & C Black Publishers, London, UK. 2010.

Book Chapters

1. Galvão DA, Taaffe DR, Spry N, Newton RU. Physical Activity and Genitourinary Cancer Survivorship. Physical Activity and Cancer, Recent Results in Cancer Research 186. Courneya KS and Friedenreichs CM (Eds). Springer-Verlag Berlin. 2010.
2. Medic N. Masters athletes. In Hanrahan S, Andersen M (Eds.). Routledge handbook of applied sport psychology: A comprehensive guide for students and practitioners (pp. 387-395). London: Routledge. 2010.
3. Medic N. (2010). Dream it, live it, love it: The research evidence. In McGrath D (Ed.). 50 athletes over 50 teach us to live a strong, healthy, life: Tools, insights, and inspirations for living spectacularly. (pp. 163-176). Denver, CO: WISE Media Group. 2010.

Refereed Journal Articles (69 refereed journal articles, ERA A*: 22, A: 11, B: 14, C: 16, not listed: 6)

1. Abbiss C, Burnett A, Nosaka K, Green J, Foster J, Laursen P. Effect of hot versus cold climates on power output, muscle activation and perceived fatigue during a dynamic 100-km cycling trial. *Journal of Sport Sciences* 28:117-125, 2010. *Impact Factor: 1.619, ERA Ranking: C*
2. Abbiss CR, Peiffer JJ. The influence of afferent feedback, perceived exertion and effort on endurance performance. *Journal of Applied Physiology* 108: 460-461, 2010. *Impact Factor: 3.732, ERA Ranking: A**
3. Abbiss CR, Straker L, Quod MJ, Martin DT, Laursen PB. Examining pacing profiles in elite female road cyclists using exposure variation analysis. *British Journal of Sports Medicine* 44: 437-442, 2010. *Impact Factor: 2.547, ERA Ranking: A*
4. Aldayel A, Jubeau M, McGuigan MR, Nosaka K. Less indication of muscle damage in the second than initial electrical muscle stimulation bout consisting of isometric contractions of the knee extensors. *European Journal of Applied Physiology* 108:709–717, 2010. *Impact Factor: 2.047, ERA Ranking: A*
5. Aldayel A, Jubeau M, McGuigan MR, Nosaka K. Comparison between alternating and pulsed current electrical muscle stimulation for acute muscle and systemic responses. *Journal of Applied Physiology* 109: 735-744, 2010. *Impact Factor: 3.732, ERA Ranking: A**
6. Aldayel A, Muthalib M, Jubeau M, McGuigan MR, Nosaka K. Muscle oxygenation of the vastus lateralis during alternating and pulsed current electrical stimulation. *European Journal of Applied Physiology* 2010 Oct 27 [Epub ahead of print] *Impact Factor: 2.047, ERA Ranking: A*
7. Al Haddad H, Laursen PB, Ahmaidi S, Buchheit M. Influence of cold water face immersion on post-exercise parasympathetic reactivation. *European Journal Applied Physiology* 108: 599-606, 2010. *Impact Factor: 2.047, ERA Ranking: A*
8. Al Haddad H, Laursen PB, Chollet D, Lemaitre F, Ahmaidi S, Buchheit M. Effect of cold or thermoneutral water immersion on post-exercise heart rate recovery and heart rate variability indices. *Autonomic Neuroscience* 156:111-116, 2010. *Impact Factor: -, ERA Ranking:-*
9. Astfalck RG, O’Sullivan PB, Straker LM, Smith AJ, Burnett A, Caneiro JP, Dankkaerts W. Sitting postures and trunk muscle activity in adolescents with and without nonspecific chronic back pain: an analysis based on subclassification. *Spine* 35: 1387-1395, 2010. *Impact Factor: 2.624, ERA Ranking: A*
10. Barroso R, Roschel H, Ugrinowitsch C, Araujo R, Nosaka K, Tricoli, V. Effect of eccentric contraction velocity on muscle damage in repeated bouts of elbow flexor exercise. *Applied Physiology, Nutrition, Metabolism* 35: 534-540, 2010. *Impact Factor: 1.968, ERA Ranking: B*
11. Briggs AM, Jordan JE, Buchbinder R, Burnett AF, O’Sullivan PB, Chua JYY, Osborne RH, Straker LM. Health literacy and benefits among a community cohort with and without chronic low back pain. *Pain* 150: 275-283, 2010. *Impact Factor: 5.371, ERA Ranking: A**
12. Brughelli M, Cronin J, Nosaka K. Muscle architecture and optimum angle of the knee flexors and extensors: A comparison between cyclists and Australian Rules football players. *Journal of Strength and Conditioning Research* 24: 717-721, 2010. *Impact Factor: 1.457, ERA Ranking: C*
13. Brughelli M, Cronin J, Mendiguchia J, Kinsella D, Nosaka K. Contralateral leg deficits in kinetics and kinematic variables during running in Australian Rules football players with previous hamstring injuries. *Journal of Strength and Conditioning Research* 24: 840-845, 2010. *Impact Factor: 1.457, ERA Ranking: C*

14. Brughelli M, Mendiguchia J, Nosaka K, Cronin J. Effects of eccentric exercise on optimum length of the knee flexors and extensors during the preseason in professional soccer players. *Physical Therapy in Sport* 11: 50-55, 2010. *Impact Factor: 0.674, ERA Ranking: C*
15. Buchheit M, Al Haddad H, Chivot A, Leprêtre PM, Ahmaidi S, Laursen PB. Effect of in-versus out-of-water recovery on repeated swimming sprint performance. *European Journal Applied Physiology* 108: 321-7, 2010. *Impact Factor: 2.047, ERA Ranking: A*
16. Buchheit M, Chivot A, Parouty J, Mercier D, Al Haddad H, Laursen PB, Ahmaidi S. Monitoring endurance running performance using cardiac parasympathetic function. *European Journal Applied Physiology* 108: 1153-1167, 2010. *Impact Factor: 2.047, ERA Ranking: A*
17. Buchheit M, Duché P, Laursen PB, Ratel S. Postexercise heart rate recovery in children: relationship with power output, blood pH, and lactate. *Applied Physiology, Nutrition, Metabolism* 35: 142-150, 2010. *Impact Factor: 1.968, ERA Ranking: B*
18. Bryant A, Creaby M, Newton RU, Steele J. Hamstring antagonist torque generated in vivo following ACL rupture and ACL reconstruction. *The Knee* 17: 287-90, 2010. *Impact Factor: 1.126, ERA Ranking: C*
19. Caneiro JP, O'Sullivan P, Burnett A, Barach A, O'Neil D, Tveit O, Olafsdottir K. The influence of different sitting postures on head/neck posture and muscle activity. *Manual Therapy* 15: 54-60, 2010. *Impact Factor: 2.319, ERA Ranking: B*
20. Chapman D, Newton M, McGuigan M, Nosaka K. Effect of a slow velocity eccentric exercise on muscle damage induced by fast velocity eccentric exercise. *Journal of Strength and Conditioning Research* 25: 211-219, 2011. *Impact Factor: 1.457, ERA Ranking: C*
21. Chen TC, Chen H-L, Lin M-J, Wu C-J, Nosaka K. Potent protective effect conferred by four bouts of low intensity eccentric exercise. *Medicine and Science in Sports and Exercise* 42: 1004-1012, 2010. *Impact Factor: 3.707, ERA Ranking: A**
22. Chen TC, Lin KY, Chen HL, Lin MJ, Nosaka K. Comparison in eccentric exercise-induced muscle damage among four limb muscles. *European Journal of Applied Physiology* 111: 211-223, 2011. *Impact Factor: 2.047, ERA Ranking: A*
23. Chen C-H, Nosaka K, Chen H-L, Lin M-J, Tseng K-W, Chen TC. Effects of flexibility training on eccentric exercise-induced muscle damage. *Medicine and Sciences in Sports and Exercise* 2010 Aug 2 [Epub ahead of print] *Impact Factor: 3.707, ERA Ranking: A**
24. Chye L, Nosaka K, Murray L, Edwards D, Thickbroom G. Corticomotor excitability of wrist flexor abd extensor muscles during active and passive movement. *Human Movement Science* 29: 494-501, 2010. *Impact Factor: 2.148, ERA Ranking: B*
25. Cochrane JL, Lloyd DG, Besier TF, Elliott BC, Doyle TLA, Ackland TR. Training affects knee kinematics and kinetics in cutting maneuvers in sport. *Medicine and Science in Sports and Exercise* 42: 1535-1544, 2010. *Impact Factor: 3.707, ERA Ranking: A**
26. Cormie P, McGuigan MR, Newton RU. Changes in the eccentric phase contribute to improved SSC performance after training. *Medicine and Science in Sport and Exercise* 42: 1731-1744, 2010. *Impact factor: 3.707. ERA Ranking: A**
27. Cormie P, McGuigan MR, Newton RU. Adaptations in athletic performance following ballistic power vs. strength training. *Medicine and Science in Sport and Exercise*. 42: 1582-1598, 2010. *Impact Factor: 3.707, ERA Ranking: A**
28. Cormie P, McGuigan MR, Newton RU. Influence of strength on the magnitude and mechanisms of adaptation to power training. *Medicine and Science in Sport and Exercise* 42: 1566-1581, 2010. *Impact Factor: 3.707, ERA Ranking: A**
29. Cruise KE, Bucks RS, Loftus AM, Newton RU, Pegoraro R, Thomas MG. Exercise and Parkinson's: Benefits for cognition and quality of life. *Acta Neurologica Scandinavica*, Mar 1. [Epub ahead of print], 2010. *Impact factor: 2.317. ERA Ranking: B*

30. Fath F, Blazevich AJ, Waugh CM, Miller SC, Korff T. Direct comparison of *in vivo* Achilles tendon moment arms obtained from ultrasound and MR scans. *Journal of Applied Physiology*, 109: 1644-1652, 2010. *Impact Factor: 3.732, ERA Ranking: A**
31. Frost DM, Cronin J, Newton RU. A biomechanical evaluation of resistance: Fundamental concepts for training and sports performance. *Sports Medicine* 40: 303-326, 2010. *Impact factor: 3.118, ERA Ranking: A**
32. Frost DM, Cronin JB, Newton RU. A novel approach to identify the end of the concentric phase during ballistic upper-body movements. *Journal of Strength and Conditioning Research* 24: 282-288, 2010. *Impact Factor: 1.457, ERA Ranking: C*
33. Goh SS, Laursen PB, Dascombe B, Nosaka K. Effect of lower body compression garments on submaximal and maximal running performance in cold (10°C) and hot (32°C) environments. *European Journal Applied Physiology* 2010 Nov 3. [Epub ahead of print] *Impact Factor: 2.047, ERA Ranking: A*
34. Galvão DA, Taaffe DR, Spry N, Joseph D, Newton RU. A combined resistance and aerobic exercise program reverses muscle loss in men undergoing androgen suppression therapy for prostate cancer without bone metastases: a randomized controlled trial. *Journal of Clinical Oncology* 28: 340–347, 2010. *Impact Factor: 17.157, ERA Ranking: A**
35. González-Ravé JM, Delgado M, Vaquero M, Juarez D, Newton RU. Changes in vertical jump height, anthropometric characteristics and biochemical parameters after contrast training in masters athletes and physically active older people. *Journal of Strength and Conditioning Research*, In press April 2010. *Impact Factor: 1.457, ERA Ranking: C*
36. Harris NK, Cronin J, Taylor K, Boris J, Sheppard J. Understanding position transducer technology for strength and conditioning practitioners. *Strength and Conditioning Journal*, 32: 66-79, 2010. *Impact Factor: 0.210, ERA Ranking: C*
37. Hori N, Appleby BB, Andrews WA, Nosaka K. The effect of lifting straps on peak velocity, force, and power during clean pull. *Journal of Australian Strength and Conditioning* 18 (2): 4-9, 2010. *Impact Factor: -, ERA Ranking: -*
38. Joyce C, Burnett A, Ball K. Methodological considerations for the 3D measurement of the X-factor and lower trunk movement in golf. *Sports Biomechanics* 9: 206-221, 2010. *Impact Factor: 0.762, ERA Ranking: C*
39. Kay AD, Blazevich AJ. Concentric muscle contractions prior to static stretching minimize but do not remove stretch-induced force deficits. *Journal of Applied Physiology*, 108: 637-645, 2010. *Impact Factor: 3.732, ERA Ranking: A**
40. Khamwong P, Nosaka K, Pirunsan U, Paungmali A. Reliability of muscle function and sensory perception measurements of the wrist extensors. *Physiotherapy Theory and Practice* 26: 408-415, 2010. *Impact Factor: -, ERA Ranking: -*
41. Kraemer WJ, Joseph MF, Volek JS, Hoffman JR, Ratamess NA, Newton RU, Fragala MS, French DN, Rubin MA, Scheett TP, McGuigan MR, Thomas GA, Gomez AL, Häkkinen K, Maresh CM. (2010). Endogenous opioid peptide responses to opioid and anti-inflammatory medications following eccentric exercise-induced muscle damage. *Peptides* 31: 88-93, 2010. *Impact Factor: 2.705, ERA Ranking: A*
42. Laursen PB. Training for intense exercise performance: high-intensity or high-volume training? *Scandinavian Journal of Medicine and Science in Sports*. 20 Suppl 2:1-10, 2010. *Impact Factor: 2.295, ERA Ranking: B*
43. Le Meur Y, Hausswirth C, Abbiss C, Baup Y, Dorel S. Performance factors in the new combined event of modern pentathlon. *Journal of Sports Sciences* 28: 1111-1116, 2010. *Impact Factor: 1.619, ERA Ranking: B*
44. Meylan C, Nosaka K, Green J, Cronin J. The effect of three different start thresholds on the kinematics and kinetics of a countermovement jump. *Journal of Strength and Conditioning Research* 2010 Jul 10 [Epub ahead of print] *Impact Factor: 1.457, ERA Ranking: C*

45. Meylan C, Nosaka K, Cronin J. Temporal and kinetic analysis of unilateral jumping in the vertical, horizontal and lateral directions. *Journal of Sports Sciences* 28: 545-554, 2010. *Impact Factor: 1.619, ERA Ranking: B*
46. McLean BD, Coutts AJ, Kelly V, McGuigan MR, Cormack S. Neuromuscular, endocrine and perceptual fatigue responses during different length between-match microcycles in professional rugby league players. *International Journal of Sports Physiology and Performance* 5: 367-383, 2010. *Impact Factor: -, ERA Ranking: -*
47. McGuigan MR, Newton MJ, Winchester JB, Nelson AG. Relationship between isometric and dynamic strength in recreationally trained men. *Journal of Strength and Conditioning Research* 24: 2570-2573, 2010. *Impact Factor: 1.457, ERA Ranking: C*
48. McMaster T, Cronin J, McGuigan MR. Quantification of rubber and chain based resistance modes. *Journal of Strength and Conditioning Research* 24: 2056-2064, 2010. *Impact Factor: 1.457, ERA Ranking: C*
49. Michell T, O'Sullivan PB, Burnett A, Straker L, Smith A, Thornton J, Rudd C. Identification of modifiable personal factors that predict new-onset low back pain: a prospective study of female nursing students. *Clinical Journal of Pain* 26: 275-283, 2010. *Impact Factor: 3.005, ERA Ranking: A*
50. Muthalib M, Jubeau M, Millet GY, Maffiuletti NA, Ferrari M, Nosaka K. Biceps brachii muscle oxygenation in electrical muscle stimulation. *Clinical Physiology and Functional Imaging* 30: 360-368, 2010. *Impact Factor: 1.333, ERA Ranking: C*
51. Muthalib M, Millet GY, Quaresima V, Nosaka K. Reliability of near-infrared spectroscopy for measuring biceps brachii oxygenation during sustained and repeated isometric contractions. *Journal of Biomedical Optics* 15: 017008, 2010. *Impact Factor: 2.501, ERA Ranking: B*
52. Muthalib M, Lee H, Millet GY, Ferrari M, Nosaka K. Comparison between maximal lengthening and shortening contractions for biceps brachii muscle oxygenation and hemodynamics. *Journal of Applied Physiology* 109: 710-720, 2010. *Impact Factor: 3.732, ERA Ranking: A**
53. Nimphius S, McGuigan MR, Newton RU. Relationship between strength, power, speed and change of direction performance of female softball players. *Journal of Strength and Conditioning Research*, 24: 885-895, 2010. *Impact Factor: 1.457, ERA Ranking: C*
54. Nosaka K, Abbiss CR, Watson G, Wall B, Suzuki K, Laursen P. Recovery following an Ironman triathlon: A case study. *European Journal of Sports Science*. 10: 159-165, 2010. *Impact Factor: 0.742, ERA Ranking: C*
55. Noorkoiv M, Nosaka K, Blazevich A. Assessment of quadriceps muscle cross-sectional area by ultrasound extended-field-of-view imaging. *European Journal of Applied Physiology* 109: 631-639, 2010. *Impact Factor: 2.047, ERA Ranking: A*
56. Noorkoiv M, Stavnsbo A, Blazevich AJ. In vivo assessment of muscle fascicle length by extended field-of-view ultrasonography. *Journal of Applied Physiology*, 109: 1974-1979, 2010. *Impact Factor: 3.732, ERA Ranking: A**
57. O'Donovan G, Blazevich AJ, Boreham C, Cooper A, Crank A, Ekelund U, Fox KR, Gately P, Giles-Corti B, Gill JMR, Hamer M, McDermott I, Murphy M, Mutrie N, Reilly JJ, Saxton JM, Stamatakis E. The ABC of physical activity for health in adults: a Consensus statement from the British Association of Sport and Exercise Sciences. *Journal of Sports Sciences* 28: 573-591, 2010. *Impact Factor: 1.619, ERA Ranking: B*
58. Peiffer JJ, Abbiss CR. The influence of elliptical chainrings on 10 km cycling time trial performance. *International Journal of Sports Physiology and Performance* 5: 459-468, 2010. *Impact Factor: -, ERA Ranking: -*
59. Peiffer, JJ, Abbiss CR, Nosaka K, Wall B, Watson G, Laursen PB Effect of a 5 min cold water immersion recovery on exercise performance in the heat. *British Journal of Sports Medicine* 44: 461-465, 2010. *Impact Factor: 2.547, ERA Ranking: A*

60. Peiffer JJ, Abbiss CR, Nosaka K, Watson G, Laursen PB. Effect of cold water immersion on repeated 1 km cycling performance in the heat. *Journal of Science and Medicine in Sport* 13: 112-116, 2010. *Impact Factor: 1.570, ERA Ranking: A*
61. Peiffer JJ, Galvão DA, Gibbs Z, Smith K, Turner D, Foster J, Martins R, Newton RU. Strength and functional characteristics of men and women 65 years and older. *Rejuvenation Research* 13: 75-82, 2010. *Impact factor: 5.008, ERA Ranking: A**
62. Pescud M, Pettigrew S, McGuigan MR, Newton RU. Factors influencing overweight children's commencement of and continuation in a resistance training program. *BMC Public Health* 10:709, 2010. *Impact Facto: 2.223, ERA Ranking: B*
63. Pettigrew S, Pescud M, Donovan R, Newton RU, Boldy D. Mature adults' attitudes to mental health service utilisation. *Australian Psychologist*. 45: 141-150, 2010. *Impact Factor: 1.007, ERA Ranking: B*
64. Quod MJ, Martin DT, Martin JC, Laursen PB. The power profile predicts road cycling MMP. *International Journal of Sports Medicine* 31: 397-401, 2010. *Impact Factor: 1.589, ERA Ranking: B*
65. Ranson CA, Burnett AF, Kerslake RW. Injuries to the lower back in elite fast bowlers: acute stress changes on MRI predict stress fracture. *The Journal of Bone and Joint Surgery-British* 92-B: 1664-1668, 2010. *Impact Factor: 2.655, ERA Ranking: B*
66. Ross ML, Garvican LA, Jeacocke NA, Laursen PB, Abbiss CR, Martin DT, Burke LM. Novel pre-cooling strategy enhances time trial cycling in the heat. *Medicine and Science in Sports and Exercise* 2010 May 27. [Epub ahead of print] *Impact Factor: 3.707, ERA Ranking: A**
67. Schmitz K, Courneya KS, Matthews C, Demark-Wahnefried W, Galvão DA, Pinto BM, Irwin ML, Wollin K, Segal R, Lucia A, Schneider CM, Vongruenigen V, Schwartz A. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Medicine and Science in Sports and Exercise* 42:1409-1426, 2010. *Impact Factor: 3.399, ERA Ranking: A**
68. Siegel R, Maté J, Brearley MB, Watson G, Nosaka K, Laursen PB. Ice slurry ingestion increases core temperature capacity and running time in the heat. *Medicine and Science in Sports and Exercise* 42: 717-25, 2010. *Impact Factor: 3.707, ERA Ranking: A**
69. Taylor KL, Cronin J, Gill ND, Chapman DW, Sheppard J. Sources of variability in iso-inertial jump assessments. *International Journal of Sports Physiology & Performance* 5: 546-558, 2010. *Impact Factor: -, ERA Ranking: -*

In this report, conference presentations including invited presentations are not included. However, it should be noted that our members made more than 70 presentations in 2010 in various conferences and meetings, and 12 of them were made as invited speakers.

It is also important to note that abstracts are reviewed by its organising committee for most of the conferences that we attend, and the abstracts are published in a journal or a proceeding.

HIGHER DEGREE BY RESEARCH LOAD

	Name	Program	Supervisors	Started	Memo
1	Warren Andrews	PhD	Newton R	2004 (1)	Part time
2	Debra Perich	PhD	Burnett	2005 (1)	Completed
3	Marc Quod	PhD	Laursen	2005 (1)	Part time
4	Lynda Murray	PhD	Nosaka, Thickbroom	2006 (1)	
5	Abdulaziz Al Dayel	PhD	Nosaka, McGuigan	2006 (1)	Completed
6	Steve Pratt	PhD	Newton R	2006 (1)	Part time
7	Keir Hansen	PhD	Cronin, Newton M	2006 (1)	Part time
8	Kristie Lee-Taylor	PhD	Cronin, Newton	2007 (1)	
9	Rodney Siegel	PhD	Laursen, Nosaka, Watson	2007 (1)	<i>Completed</i>
10	Nur Ikhwan Mohamad	PhD	Cronin, Nosaka	2007 (2)	Completed
11	Bradley Wall	PhD	Galvao, Newton R	2008 (1)	
12	Joseph Mate	PhD	Watson, Laursen, Oosthuizen	2008 (1)	<i>Completed</i>
13	Marika Noorkoiv	PhD	Blazevich, Nosaka	2008 (2)	
14	Wing Yin Lau	PhD	Nosaka, Blazevich, Newton	2008 (2)	
15	Megan Ross	PhD	Abbiss, Laursen	2009 (1)	
16	Stuart Karppinen	PhD	Newton R, McGuigan	2009 (1)	Part time
17	Jo Trezise	PhD	Blazevich	2009 (1)	
18	Amada Overton	PhD	Blazevich, Abbiss	2009 (1)	
19	Zoe Gibbs	PhD	Newton R, Galvao	2009 (1)	
20	Tugay Esgin	PhD	Newton R, Newton M	2009 (1)	
21	Nick Poulos	PhD	Newton R, Newton M	2009 (1)	
22	David Hayes	PhD	Blazevich	2009 (2)	<i>Deferred</i>
23	Jacob Earp	PhD	Newton R, Blazevich, Cormie	2009 (2)	
24	Favil Singh	PhD	Galvao, Newton R	2009 (2)	
25	Gregory Levin	PhD	Galvao, Newton R	2009 (2)	
26	Eva Bolland	PhD	Abbiss, Martin	2010 (1)	<i>Deferred</i>
27	Mohammed Ihsan Izzat	PhD	Watson, Abbiss	2010 (1)	
28	Luis Peñailillo	PhD	Nosaka, Blazevich	2010 (1)	
29	Roger Pegoraro	PhD	Newton R, Thomas	2010 (1)	<i>Withdrawn</i>
30	Sam Goh Shi Shien	PhD	Abbiss, Nosaka,	2010 (1)	
31	Chris Joyce	MS/PhD	Burnett, Cochrane	2008 (1)	Upgraded
32	Melissa DeKlerk	MS	Cochrane, Nosaka, Chapman	2006 (1)	
33	Dom Passalacqua	MS	Burnett, Kerr	2008 (1)	
34	Kyle Smith	MS	Newton R, Turner	2006 (1)	
35	Ben Thomasian	MS	Blazevich, Cochrane	2008 (2)	Deferred
36	Roy Yan Hang Chan	MS	Nosaka, Newton M	2009 (1)	<i>Submitted</i>
37	Julia Skleryk	MS	Watson, Laursen, Sharman	2009 (1)	<i>Submitted</i>
38	Benjamin Kan	MS	Nosaka, Dandus	2009 (1)	<i>Submitted</i>
39	Julian Jones	MS	Newton R	2009 (2)	
40	Samuel Robertson	MS	Burnett, Newton R	2009 (2)	
41	Tania Spiteri	MS	Cochrane, Nimphius	2010 (1)	
42	William Carey-Smith	MS	Nimphius, Cochrane	2010 (1)	
43	Nicholas Hart	MS	Cochrane, Nimphius	2010 (1)	
44	Yimian Lin	MS	Newton M, Nosaka	2010 (1)	
45	Erin Bormann	MS	Medic	2010 (1)	
46	Fujie Derek Koh	MS	Watson	2010 (1)	
47	Henry Banyard	MS	Nosaka	2010 (1)	

*In memo, the information is based on 06/05/2011. *Italic* indicates that it was not in 2010.

HIGHER DEGREE BY RESEARCH COMPLETIONS

1. Abdulaziz A. AlDayel (PhD): Comparison of acute physiological effects between alternating and pulsed current electrical muscle stimulation. Supervisors: Nosaka K, McGuigan M.
2. Makii Muthalib (PhD): Effects of muscle contractions on biceps brachii oxygenation investigated by near-infrared spectroscopy. Supervisor: Nosaka K, Millet G.
3. Nur Ikhwan Mohammad (PhD): Kinematics and kinetics associated with hypertrophy training or strength and power assessment. Supervisors: Cronin J, Nosaka K.
4. Debra Perich (PhD): Low Back Pain in Schoolgirl Rowers: Prevalence, Bio-Psycho-Social Factors and Prevention. Supervisors: Burnett A, and O'Sullivan P.
5. Roger Pegoraro (Master of Science): Electrical train stimulation to assess exercise-associated muscle cramp. Supervisors: Nosaka K, Laursen P, Watson G.
6. Shi Shien Goh (Master of Science): Effect of lower body compression garments (Skins™) on submaximal and maximal running performance in hot and cold conditions in male recreational runners. Supervisors: Nosaka K, Laursen P.

VISITORS AND COLLABORATIONS

1. Professor Trevor Chung-Ching Chen (National Chiayi University, Taiwan). FCHS Visiting Research Fellow Scheme. 25th January – 21st February 2010.
2. Dr. Marcelo Saldanha Aoki (University of São Paulo, Brazil). FCHS Visiting Research Fellow Scheme. 25th October 2010 – 30th January 2011.
3. Professor Jeanick Brisswalter (University of Nice Sophia Antipolis, France). FCHS Visiting Research Fellow Scheme. 27th November – 14th December.
4. Dr. David Cameron-Smith (Deakin University). 29th November 2010.

* We still keep the collaborators with the researchers shown below from the previous years.

- Professor Nigel Spry (University of Western Australia)
- Professor Guillaume Millet (University of Lyon, France)
- Dr. David Martin – Australian Institute of Sport
- Dr Jonathan Peake (University of Queensland)
- Dr. Bill Sheel (University of British Columbia, Canada)
- Dr. Dennis Taaffe (The University of Queensland)
- Dr. Helen Slater (Curtin University)
- Dr. Katsuhiko Suzuki (Waseda University, Japan)
- Dr. Maffioletti (Université de Bourgogne, France)
- Dr. Thanasis Jamurtas (University of Thessaly, Greece)
- Dr. Stephen S. Cheung (Brock University, Canada)
- Dr. Jim Martin (University of Utah, USA)
- Dr. Valmor Tricoli (University of São Paulo, Brazil)
- Dr. Aatit Paungmali (Chiang Mai University, Thailand)

COMMUNITY ENGAGEMENT ACTIVITIES AND LINKAGES

Each member of the CESSR engages in the community in many different ways from professional services to scientific organisations (e.g. editorial board of a journal, reviewer for a journal, examiner for a thesis, member for a state and/or national committee or council) to scientific consultation to sport teams (e.g. Western Force and Rugby, West Coast Eagles Football Club, Western Australia Cricket Association, Perth Glory Football Club, West Coast Fever Netball Club).

FUTURE PLANS AND DIRECTIONS

The table below shows the amount of external grants, the number of refereed journal publications, and the number of postgraduate students (PhD and Masters of Science) completions from 2007 to 2010, and our aims in 2011. For the research outcome for 2011, we are aiming to have more than \$1 million external grants including at least 3 Category I nationally competitive grants, more than 70 referred journal publications in which more than 35 publications are in the ERA Rank A* or A journals, and more than 5 PhD and 8 Masters of Science students completions. To achieve them, we have submitted 8 applications for the ARC and NHMRC grants, and we had a meeting for publication strategy. Regarding the postgraduate student completions, between January and now (the first week of May), 2 PhD students have completed the degree, and 3 Masters student have submitted their theses for examination and been waiting for the examiners' reports. So, it seems likely that those 3 students will complete in 2011. The PhD students who enrolled in the program in 2008 or earlier, and the Masters students who started in 2009 or earlier should be submitting their theses in 2011. In fact, some of them are close to the submission. So, it is highly possible to achieve the number (more than 5PhD and 8 Masters completions). We are organising a meeting (CESSR meeting) in which our postgraduate students, staff and visitors present their research. This meeting was held only three times in 2010, but we are planning to have it monthly. We have the Director (Mr. McDonald) for the Human Performance Centre (HPC) from mid 2010, and the activities of the centre have been expanding. We need to link the CESSR and HPC, and aim to make some research outputs from the data collected by the HPC. We need to prepare well for the five-year review that is expected in 2012. We will have a new undergraduate course, Sports Science and Football, from 2012, and have been preparing for the new course that is lead by Dr. Fadi Ma'ayah. We need to extend our research relating to football (soccer). We have recently welcomed a new staff, Dr. Greg Haff, who will lead our Masters of Exercise Science (Strength & Conditioning) program, and it is expected that he will greatly contribute to the research outcomes of the CESSR. We should be improving our research outcomes and engagements.

Table: Research outcomes of the Centre for Exercise and Sports Science research in 2007-2010, and aims for 2011.

	2007	2008	2009	2010	2011
Grants – External (Category I grant)	\$554,480 (0)	\$1,315,695 (2)	\$878,408 (1)	\$924,811 (2)	>\$1,000,000 (>3)
Refereed journal publications (ERA-A*A)	47 (16)	74 (25)	66 (16)	69 (33)	>70 (>35)
Postgraduate student completions (PhD, MS)	4 PhD 7 MS	5 PhD 8 MS	3 PhD 5 MS	4 PhD 2 MS	>5 PhD > 8 MS

DATE OF NEXT FORMAL REVIEW

The CESSR was established in 2007, and this is the 4th annual report of the CESSR (2007, 2008, 2009, 2010). If the formal review is required every 5 years based on the previous five year reports (2007-2011), it should be held in the next year (2012). It would be better to have the review after completing the annual report of 2011. Considering the time taken to prepare the review, it would be better if the review is scheduled in September-October in 2012.