# **Curriculum Vitae:**



Name: Assoc/Prof. Aatit Paungmali, Ph.D

#### **Qualification:**

- B.Sc. (First Class Hons),

- M.Phty. (Orthopaedic Physical Therapy),

- Ph.D. (Physical Therapy)

**Address:** Department of Physical Therapy, Faculty of Associated Medical Sciences, Chiang Mai University, 110 Intawaroros Road, Sriproom, Chiangmai 50200, Thailand

### **Education:**

1991 – 1995 Bachelor of Sciences in Physical Therapy (First Class Honors),

Chiang Mai University, Chiang Mai, Thailand

1999 – 2000 Master Studies in Orthopaedic Physiotherapy,

The University of South Australia, Adelaide, Australia

2000 – 2004 Doctor of Philosophy (Physiotherapy),

The University of Queensland, Brisbane, Australia

### **Working Experience:**

1995 – present: Academic staff in Musculoskeletal (Orthopaedic) Unit, Department of Physiotherapy, Chiangmai University, Thailand and Co-Director of The Neuro-Musculoskeletal and Pain Research Unit, Faculty of Associated Medical Sciences, Chiang Mai University, Thailand, and also The Institutional Human Research Ethic Committee

2012 – present: Associate Dean in research and international relations, Faculty of Associated Medical Sciences, Chiang Mai University

#### **Research Interests:**

Investigation of physiological and pain-relieving effects of physiotherapy interventions (eg., thermal therapy, electrotherapy, therapeutic exercise, Core stabilization exercise, manual and manipulative therapy, as well as traditional medicine). Evaluating disability, impairment, functions and performance related to musculoskeletal disorders and injuries, such as back pain, tennis elbow, OA, etc. Evaluating pain-related measures and orthopaedic tests.

Keywords: Musculoskeletal Pain, Back Pain, Hypoalgesia, Physiological Effect, Musculoskeletal Problem, Physical Interventions, Manual Therapy, Manipulative Therapy, Traditional Medicine, Reliability Tests

## **Editorial Advisory Board Membership:**

- The Open Sports Sciences Journal (indexed in Scopus & SJR/ISI)

- Journal of Problem-Based Learning (JPBL) (Indexed in Directory of Open Access Journals (DOAJ), Crossref, Google Scholar)

#### Reviewer:

- Asian Journal of Sports Medicine
- British Journal of Sports Medicine
- BMJ Open
- Bulletin of Chiang Mai Associated Medical Sciences
- Bulletin of Health, Science and Technology
- Clinical Anatomy
- Chulalongkorn Medical Journal
- Educational Sciences: Theory and Practice
- Global Journal of Health Science
- Journal of Allied Health Sciences
- Journal of Associated Medical Sciences
- Journal of Back and Musculoskeletal Rehabilitation
- Journal of Evidence-Based Complementary and Alternative Medicine
- Journal of Faculty of Nursing Burapha University
- Journal of Hand Therapy
- Journal of Integrative Medicine
- Journal of Medical Technology and Physical Therapy
- Journal of Physical Therapy Science
- Journal of Science and Technology, Ubon Ratchathani University
- International Journal of Therapy and Rehabilitation
- Journal of International Medical Research
- Manual Therapy (Musculoskeletal Science and Practice)
- Nigerian Journal of Clinical Practice
- Pain Research and Management
- Perceptual and Motor Skills
- Physical Therapy in Sport
- Physiotherapy
- Physiotherapy Theory and Practice
- Science & Sports
- Songklanagarind Medical Journal
- Sports Medicine
- Srinagarind Medical Journal
- Thai Physical Therapy Journal

### Awards:

- The Royal Thai Government Scholarship in conjunction with the Australian Agency for International Development (AusAid) Scholarship, 1999 (March) 2003 (December).
- The best conference paper prize (plenary oral presentation), Musculoskeletal Physiotherapy Australia 12<sup>th</sup> Biennial Conference; November 21-24, 2001; Adelaide, South Australia, Australia.
- Conference Awards for the Best Oral Presentation, International Scientific Congress: 1st Asian Indoor Games; October 17-19, 2005; Bangkok, Thailand
- Young Researcher Award (Golden Elephant Award, Chiang Mai University): 24 January 2007.
- The National Innovation award (2008) "hot pack without heated device", regional category in sciences (Ministry of Science and Technology in conjunction with The Science Society of Thailand under the Patronage of His Majesty the King)
- The National Innovation award (2008) "weight-hot pack for exercise and therapeutics", regional category in sciences (The Science Society of Thailand under the Patronage of His Majesty the King in conjunction with The Thai Health Promotion Foundation)
- The Excellent AMS Alumni Award (2013) "Mahidol Day" for Health Sciences Consortium.
- "Silver Award" for the invention/innovation/Design of An innovative scoring tool for monitoring breathing pattern: Total faulty breathing scale (TFBS); Invention, innovation & Design Exposition 2016 (iidex2016), Malaysia.
- Outstanding Researcher of the Year 2015, 2016, 2017, 2018, 2020 (Faculty of Associated Medical Sciences, Chiang Mai University)

- The Best Civil Service Commission National Award "Golden Garuda", (Group I: Academic Category "Expertise Level"), Year 2017
- Outstanding Associated Medical Sciences Alumni Award, Year 2020 (Faculty of Associated Medical Sciences, Chiang Mai University)

# The Royal Thai Decorations:

- 2020: Knight Grand Cross of the Most Exalted Order of the White Elephant. (First Class)
- 2014: Knight Grand Cross of the Most Noble Order of the Crown of Thailand. (First Class)
- 2010: Knight Commander of the Most Exalted Order of the White Elephant. (Special Colonel rank)
- 2006: Knight Commander of the Most Noble Order of the Crown of Thailand. (Colonel rank)
- 2004: Commander of the Most Exalted Order of the White Elephant. (Lieutenant Colonel rank)
- 2000: Commander of the Most Noble Order of the Crown of Thailand. (Major rank)

Membership: Thai Physical Therapy Association (Membership No: L-0499); PT License No: กิ1170

#### Patents:

- Weight exercise hot pack (Int. Cl.10 6294 06 06 54)
- Pottery hot pack (Int. Cl.10 7380 27 07 55)
- Ease pad (registration no. 0801004866)
- Wheat herbal hot pack (Int. Cl.10 6909 30 01 55)
- Heat pad for eyes (registration no. 1903000680)

#### **Latest Publications:**

#### Peer-Reviewed International Journal:

- Sattasuk, W., Sitilertpisan, P., Joseph, L., Paungmali, A. & Pirunsan, U. A Clinical Evaluation of Scapular Dyskinesis Among Professional Bus Drivers With Unilateral Upper Quadrant Musculoskeletal Pain. *Workplace Health & Safety.* 2021.
- Kasemsan, A., Joseph, L., Paungmali, A., Sitilertpisan, P. & Pirunsan, U. Prevalence of musculoskeletal pain and associated disability among professional bus drivers: a cross-sectional study. *International Archives of Occupational and Environmental Health.* 2021.
- Nipa SI, Sriboonreung T, Paungmali A, et al. 2021. Prevalence of Urinary Incontinence Among the Hospital Based and Community Dwelling Women: A Survey. *Journal of Health Science and Medical Research*. (Accepted).
- Leonard Joseph, Lenny Vasanthan, Miles Standen, Raija Kuisma, Aatit Paungmali, Ubon Pirunsan, Patraporn Sitilertpisan. 2021. Causal Relationship Between the Risk Factors and Work-Related Musculoskeletal Disorders Among Professional Drivers: A Systematic Review. *Human Factors*. (Inpress).
- Nipa SI, Sriboonreung T, Paungmali A, et al. 2021. Validity and Reliability Measurement of Bengali Translated Questionnaire for Urinary Incontinence Diagnosis. *Journal of Health Science and Medical Research*. (In-press).
- Duangruedee Dissanguan, Patraporn Sitilertpisan, Leonard H. Joseph, Aatit Paungmali. 2021. Immediate effects of a novel lumbar support device on pain modulation and core muscle function among patients with chronic non-specific low back pain: A randomized controlled trial. *Muscle, Ligaments and Tendons Journal (In-press)*.
- Vikram Mohan, Aatit Paungmali, Patraporn Sitilertpisan, Leonard Joseph, Afiqah Ramlan, Syaza Afiqah Ramlan. 2020. Improved respiratory characteristics in non-specific low back pain: Comparison of Feldenkrais method versus routine physiotherapy. *Physiotherapy Practice and Research*; 41(2): 99-107).

- P. Sitilertpisan, L. Joseph, A. Paungmali, U. Pirunsan, T. Chunchai. 2020. Investigation of the Contraction Ratio of Transversus Abdominis and Internal Oblique Muscles during Lumbopelvic Stability Test. *Muscles, ligaments and tendons journal* (in-press).
- Mohan V, Paungmali A, Sitilertpisan P, Joseph L, Omar FA, Azhar FZ. 2020. Effect of Core stability with Ball and Balloon Exercise on Respiratory Variables among Chronic Non-Specific Low Back Pain: an Experimental Study. *Journal of Bodywork & Movement Therapies.*; 24: 196-202.
- Mohamed WJ, Joseph L, Canby G, Paungmali A, Sitilertpisan P, Pirunsan U. 2020. Are patient expectations associated with treatment outcomes in individuals with chronic low back pain? A systematic review of randomised controlled trials. *Int J Clin Prac:* doi: 10.1111/ijcp.13680.
- Thidarat Leeungurasatien, Aatit Paungmali, Apichat Tantraworasin. 2020. Efficacy of wheat hot pack (dry heat) and pottery hot pack (moist heat) on eyelid temperature and tissue blood flow in healthy eyes:
- a randomized control trial. Int Ophthalmol: https://doi.org/10.1007/s10792-020-01300-z.
- Joseph, L., Standen, M., Paungmali, A., Kuisma, R., Sitilertpisan, P., Pirunsan, U. 2020. Prevalence of musculoskeletal pain among professional drivers: A systematic review. *Journal of occupational health;* 62(1): e12150.
- Leonard Joseph, Aatit Paungmali, Patraporn Sitilertpisan, Ubon Pirunsan, Samatchai Chamnongkich. 2020. Effects of Multimodal Intervention Program Among Elite Weightlifters with Knee Pain. *Asian Journal of Sports Medicine*. (In-press) doi: 10.5812/asjsm.95220.
- Nipa SI, Sriboonreung T, Paungmali A, Phongnarisorn C. 2020. Effectiveness of therapeutic interventions for the women with urinary incontinence: A systematic review. *Critical Reviews in Physical and Rehabilitation Medicine*; 32(1): 1-22.
- Rachel Coe-O'Brien, Leonard Joseph, Raija Kuisma, Aatit Paungmali, Patraporn Sitilertpisan, Ubon Pirunsan. 2020. Outcome measures used in the smartphone applications for the management of low back pain: a systematic scoping review. *Health Information Science and Systems* 8:5 in-press.
- Nipa SI, Sriboonreung T, Paungmali A, Phongnavisorn C. 2019. Linguistic validation of medical epidermiological and social aspects of aging questionnaire in Bengali langauge. *Int J Linguistics, Literature & Translation* (in press): 220-226.
- Nipa SI, Sriboonreung T, Paungmali A, Phongnavisorn C, Ahmed K. 2019. Management of Stress Urinary Incontinence in a Woman with Low Back Pain Throughout the International Classification of Functioning Disability and Health Along with the Narrative Reasoning Process. *J Preventive Social Med [Journal of preventive and social medicine: JOPSOM]* 38(1): 111-115.
- Nakhengrit, C., Boonprakob, Y., Jorns, T.P., Pitiphat, W., Paungmali, A. 2019. Comparative efficacy of multiplane force application and ischemic compression on masticatory muscles: A randomized controlled trial. *Journal of the Medical Association of Thailand;* 102(6): 106-112.
- Duangruedee Dissanguan, Patraporn Sitilertpisan, Kiatwattanacharoen Suchart, Leonard H. Joseph, Puangmali Pinyo, Aatit Paungmali. 2019. Reliability and validity of the feedback sensor for activating the transversus abdominis muscle. *Open Biomedical Engineering Journal*; 13(1), 67-73.
- Duangruedee Dissanguan, Patraporn Sitilertpisan, Leonard H. Joseph, Aatit Paungmali. Effectiveness of Lumbar Support in Management of Low Back Pain: A Systematic Review. *Online J Health Allied Scs.* 2018;17(4):3.
- Akarapon Doungkulsa, Aatit Paungmali, Leonard Joseph, Peanchai Khamwong. 2018. Effectiveness of air pulsed cryotherapy on delayed onset muscle soreness of elbow flexors following eccentric exercise. *Polish Annals of Medicine*; 25(1): 103-111.
- Leonard Henry Joseph, Benjamaporn Hancharoenkul, Patraporn Sitilertpisan, Ubon Pirunsan, Aatit Paungmali. 2018. Comparison of Effects Between Core Stability Training and Sports Massage Therapy Among EliteWeightlifters with Chronic Non-Specific Low Back Pain: A Randomized Cross-Over Study. *Asian Journal of Sports Medicine*; 9(1): e58644.
- Aatit Paungmali, Leonard Henry Joseph, Khanittha Punturee, Patraporn Sitilertpisan, Ubon Pirunsan, Sureeporn Uthaikhup, 2018. Acute effects of core stabilization exercise on beta-endorphin and cortisol levels among patients with chronic non-specific low back pain A randomized cross over design. *Journal of Manipulative and Physiological Therapeutics*; 41(3): 181-188.
- Vikram Mohan, Aatit Paungmali, Patraporn Sitilerpisan, Ummi Farhana Hashim, Sulaiman Md Dom, Munifa Binti Mazlan, Tuan Nur Nasuha. 2018. Respiratory Characteristics of Individuals with Non-Specific Low Back Pain: A cross-sectional study. *Nursing & Health Sciences* 20(2): 224-230.

- Mohan, V., Hashim, U.F., Md Dom, S., Sitilerpisan, P., Paungmali, A. 2017. Reliability of diaphragmatic mobility assessment using a real time ultrasound among non-specific low back pain. *Bangladesh Journal of Medical Science* 16(3) 443-447.
- Vikram Mohan, Aatit Paungmali, Patraporn Sitilerpisan, Sulaiman Md Dom, Ummi Farhana Hashim, Siti Nor Binti Daud, Manikumar Muthiah. 2017. Reliability of diaphragmatic mobility assessment: A systematic review. *Polish Annals of Medicine*; 25(2):266-271.
- Vikram Mohan, Aatit Paungmali, Patraporn Sitilertpisan. 2017. The Science of Respiratory Characteristics in Individuals with Chronic Low Back Pain: Interpreting through Statistical Perspective. *Journal of Bodywork & Movement Therapies* 22(1): 11-12.
- Deepashini Harithasan, Baharudin Omar, Aatit Paungmali. 2017. Pattern of alteration in foot mechanics when carrying loads unilaterally in hand. *Internet Journal of Allied Health Sciences and Practice*, 15(2): Article 7.
- Joseph LH, Pirunsan U, Sitilertpisan P, Paungmali A. 2017. Effect of lumbopelvic myofascial force transmission on glenohumeral kinematics A myo-fasciabiomechanical hypothesis. *Polish Annals of Medicine* 24(2): 276-282.
- Vikram Mohan, Aatit Paungmali, Patraporn Sitilertpisan, Leonard J Henry, Norazlin B Mohamad, Nurul Nadiah B Kharami. 2017. Feldenkrais Method on Neck and Low Back Pain into the Type of Exercises and Outcome Measurement Tools: A Systematic Review. *Polish Annals of Medicine* 24(1):77-83.
- Mohan V, Paungmali A, Sitilertpisan P. 2017. Altered Breathing Pattern Valuation Relative to Dyspnea Assessment and Treatment for Low Back Pain: Effects of Clinical Practice. *Manual Therapy (Musculoskeletal Science and Practice):* e1-e2.
- Paungmali A, Joseph L, Sitilertpisan P, Pirunsan U, Uthaikhup S. 2017. Lumbo-pelvic core stabilization exercise and pain modulation among individuals with chronic non-specific low back pain. *Pain Practice* 17(8): 1008-1014.
- Vikram Mohan, Maria Perri, Aatit Paungmali, Patraporn Sitilertpisan, Leonard Henry Joseph, Romizan Jathin, Munirah Bt Mustafa, Siti Hawa Bt Mohd Nasir. 2016. Intra-rater and inter-rater reliability of total faulty breathing scale using visual observation and videogrammetry methods. *Journal of Bodywork and Movement Therapies* 21(3): 694-698.
- Mohan V, Paungmali A, Sitilertpisan P. 2016. Application of neuroplasticity theory through the use of the Feldenkrais Method with a runner with scoliosis and lower quarter pain: Additional respiratory mechanic principle, implication of the Feldenkrais method for clinical practice in neuro-musculoskeletal rehabilitation. *J Bodywork Mov Ther* 21(3): 470-471.
- Leonard Henry Joseph, Aatit Paungmali, John Dixon, Liz Holey, Amaramalar Selvi Naicker, Ohnmar Htwe. 2016. Therapeutic effects of connective tissue manipulation on wound healing and bacterial colonization count among patients with diabetic foot ulcer. *J Bodywork Mov Ther* 20(3): 650-656.
- Mani S, Sharma S, Omar B, Paungmali A, Joseph L. 2016. Validity and reliability of internet-based physiotherapy assessment for musculoskeletal disorders: A systematic review. *J Telemed Telecare* 23(3): 379-391.
- Paungmali A, Joseph L, Sitilertpisan P, Pirunsan U, Uthaikhup S. 2016. Improvements in tissue blood flow and lumbopelvic stability after lumbo-pelvic core stabilization training among patients with chronic non-specific low back pain. *Journal of Physical Therapy Science*: 28(2): 635-640.
- Henry LJ, Paungmali A, Mohan V, Ramli A. 2016. Feldenkrais method and movement education. An alternate therapy in musculoskeletal rehabilitation. *Polish Annals of Medicine*. 23: 68-74.
- Joseph L. Paungmali A, Sitilertpisan P, Pirunsan U, Uthaikhup S. 2015. Changes in Transversus Abdominis muscle thickness after lumbo-pelvic core stabilization training among chronic low back pain individuals. *Clinical Therapeutics* 166(5): e312-316.
- Benjaboonyanupap D, Paungmali A, Pirunsan U. 2015. Effect of therapeutic sequence of hot pack and ultrasound on physiological response over trigger point of upper Trapezius. *The Asian Journal of Sports Medicine* 6(3): e23806.
- Khamwong P, <u>Paungmali A</u>, Pirunsan U, Leonard Joseph. 2015. Prophylactic effects of Sauna on delayed-onset muscle soreness of the wrist extensors. *The Asian Journal of Sports Medicine* 6(2): e25549.

- Uthaikhup S, Prasert R, Paungmali A, Boontha K. 2015. Altered pain sensitivity in elderly women with chronic neck pain. *PLoS One*. 10(6):e0128946.
- LH Joseph, R Hussain, AS Naicker, O Htwe, U Pirunsan, A Paungmali. 2015. Pattern of changes in local and global muscle thickness among individuals with sacroiliac joint dysfunction. Hong Kong Physiotherapy Journal. 33(1): 28-33.
- Joseph LH, Hussain RI, Naicker AS, Ohnmar H, Pirunsan U, Paungmali A. 2014. Myofascial force transmission in sacroiliac joint dysfunction increases anterior translation of humeral head in contralateral glenohumeral joint. *Polish Annals of Medicine*. 21(2): 103-108.
- Harithasan Deepashini, Baharudin Omar, <u>Aatit Paungmali</u>, Naicker Amaramalar, Htwe Ohnmar, Joseph Leonard. 2014 An insight into the plantar pressure distribution of the foot in clinical practice: Narrative review Review Article. *Polish Annals of Medicine*. 21(1): 51-56.
- Joseph LH, Naicker AS, Htwe O, Pirunsan U, Paungmali A. 2014. Alterations in the posterior oblique chain muscle activity amoung individuals with sacroiliac dysfunction. *Middle East Journal of Scientific Research*. 21(4): 580-594.
- Harithasan Deepashini, Baharudin Omar, <u>Aatit Paungmali</u>, Naicker Amaramalar, Htwe Ohnmar, Joseph Leonard. 2014. Reliability study of plantar pressure measurement among low back pain patients carrying different loads. *Middle East Journal of Scientific Research*. 21(7): 1044-1050.
- Joseph LH, Hussain RI, Pirunsan U, Naicker AS, Htwe O, <u>Paungmali A</u>. 2014 Clinical evaluation of the anterior translation of glenohumeral joint using ultrasonography: an intra- and inter-rater reliability study. *Acta Orthop Traumatol Turc*. 48(2):169-74.
- Joseph L, Hussain RI, Naicker AS, Htwe O, Pirunsan U, Paungmali A. 2013 (in-press) Anterior translation of humeral head in glenohumeral joint: Comparison between limb dominance and gender using ultrasonography. *Polish Annals of Medicine* (http://dx.doi.org/10.1016/j.poamed.2013.09.006).
- Joseph L, Pirunsan U, <u>Paungmali A</u>. 2012 Effectiveness of two manipulative therapies in sacroiliac joint syndrome- Thoughts for research and clinical applications. *Journal of Bodywork and Movement Therapies* 16: 409-410. (doi: 10.1016/j.jbmt.2012.01.001).
- <u>Paungmali A</u>, Sitilertpisan P, Taneyhill K, Pirunsan U, Uthaikhup S. 2012 Intrarater Reliability of Pain Intensity, Tissue Blood Flow, Thermal Pain Threshold, Pressure Pain Threshold and Lumbo-Pelvic Stability Tests in Subjects With Low Back Pain. *The Asian Journal of Sports Medicine* 3(1): 8-14.
- Joseph L, <u>Puangmali A</u>, Pirunsan U, Srijit D. 2011 Sacroiliac joint and weight distribution to feet: An opinion towards clinical and research practice. *Manual Therapy*, 17(4): e7 (doi:10.1016/j.math.2011.09.003).
- Sitilertpisan P, Hides J, Stanton W, <u>Paungmali A</u>, Pirunsan U. 2011 Multifidus muscle size and symmetry among elite weightlifters. *Physical Therapy in Sport* (in-press).
- Khamwong P, Nosaka K, Pirunsan U, <u>Paungmali A</u>. 2011 Prophylactic effect of hot pack on symptoms of eccentric exercise-induced muscle damage of the wrist extensors. *European Journal of Sport Science* 1-11 (DOI:10.1080/17461391.2011.566359).
- Sitilertpisan P, Pirunsan U, <u>Puangmali A</u>, Ratanapinunchai J, Kiatwattanacharoen S, Neamin H, Laskin JJ. 2011 Comparison of lateral abdominal muscle thickness between weightlifters and matched controls. *Physical Therapy in Sport* 12(4): 171-174.
- Uthaikhup S, <u>Paungmali A</u>, Pirunsan U. 2011 Validation of Thai versions of the Neck Disability Index and Neck Pain and Disability Scale in patients with neck pain. *Spine (Phila Pa 1976)* 36(21): E1415-1421.
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- Khamwong P, Pirunsan U, <u>Paungmali A</u>. 2011 A prophylactic effect of proprioceptive neuromuscular facilitation (PNF) stretching on symptoms of muscle damage induced by eccentric exercise of the wrist extensors. *Journal of Bodywork and Movement Therapies* 15(4): 507-516.
- Khamwong P, Nosaka K, Pirunsan U, <u>Paungmali A</u>. 2010 Reliability of muscle function and sensory perception measurements of the wrist extensors. *Physiotherapy Theory and Practice* 26(4): 1-8.
- Vicenzino B, <u>Paungmali A</u>, Teys P. 2007 Mulligan's mobilization-with-movement, positional faults and pain relief: current concepts from a critical review of literature. *Manual Therapy 12: 98-108.*

- Bisset L, <u>Paungmali A</u>, Beller E, Vicenzino B. 2005 A systematic review and meta-analysis of clinical trials on physical interventions for lateral epicondylalgia. *British Journal of Sport Medicine* 39: 411-422.
- <u>Paungmali A</u>, O'Leary S, Souvlis T, Vicenzino B. 2003 Hypoalgesic and sympathoexcitatory effects of mobilisation with movement for lateral epicondylalgia. *Physical Therapy* 83:374-383.
- <u>Paungmali A</u>, O'Leary S, Souvlis T, Vicenzino B. 2004 Naloxone fails to antagonise initial hypoalgesic effect of a manual therapy treatment for lateral epicondylalgia. *Journal of Manipulative and Physiological Therapeutics* 27: 180-185.
- <u>Paungmali A</u>, Vicenzino B, Smith M. 2003 Hypoalgesia induced by elbow manipulation in lateral epicondylalgia does not exhibit tolerance. *Journal of Pain* 4: 448-454.
- Vicenzino B, Brooksbank J, Minto J, Offord S, <u>Paungmali A</u>. 2003 Initial effects of elbow taping on painfree grip strength and pressure pain threshold. *Journal of Orthopaedic and Sports Physical Therapy* 33:400-407.
- Vicenzino B, <u>Paungmali A</u>, Buratowski S, Wright A. 2001 Specific manipulative therapy treatment for chronic lateral epicondylalgia produces uniquely characteristic hypoalgesia. *Manual Therapy* 6:205-212.