American College of Sports Medicine

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World Congress on Exercise is Medicine®

Including the Supplement to the May 2012 *Medicine & Science in Sports & Exercise*® (the abstract issue)

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FINAL PROGRAM

	Peak Torque (N.m)				Total Work (Joules)			
	1st set	2nd set	3rd set	4th set	1st set	2nd set	3rd set	4th set
CS	62.4±7.4*	52.3±6.9†	49.2±5.5‡	47.5±7.4	921.6±95.1*	734.8±64.9†	611.8±38.0‡	539.6±31.8
PS	65.1±13.1*	56.9±11.4†	53.4±9.4‡	50.6±8.3	969.4±153.4*	763.4±108.8†	626.8±55.2‡	571.3±52.2
* Higher than 2nd, 3rd, and 4th (p<0.05); † higher than 3rd, and 4th (p<0.05); ‡ higher than 4th (P<0.05)								

CONCLUSION: These results indicate that compression sleeves commonly worn by athletes and fitness enthusiasts during training and competition do not contribute to improved elbow flexion muscle strength or work capacity during repetitive high-intensity resistance exercise tasks.

3376 *Board #97* **June 2** **9:30 AM - 11:00 AM**

Effects of Nanobionic Textile T-shirt on Maximal Anaerobic Power

Evaggelos Roussopoulos, Giorgos Paradisis, Elias Zacharogiannis, Nikolaos Dimitriadis. *Track and Field Sector, University of Athens, Athens, Greece*.
(No relationships reported)

Nanobionic is a textile, made of bio-ceramic materials, that reflects back to human body the far-infrared rays that body emits. Although there are research data regarding the use of far infrared rays to improve performance and to speed up recovery from exercise, reports on their effect on maximal anaerobic power are scarce.

PURPOSE: The aim of this study was to investigate the effects of a Nanobionic t-shirt on maximal anaerobic power during exercise.

METHODS: Twelve (7 men, 5 women) healthy active subjects (age 28.2 ± 5.7 years, body mass 71.2 ± 16.1 kg, height 173.9 ± 9.5 cm) agreed to participate in the study. A double blind cross over design was used with subjects visited the lab twice for the placebo (PT) and experiment test (ET). Maximal anaerobic power parameters were determined through the wingate anaerobic test (WAnT) which was performed on a cycle ergometer (Monark 894E, Sweden)against a resistance of 0.075 kg kg body mass^{-1}. Peak power (PP) determined as the highest value over the first 5-s period of testing, mean Power (MP) as the average Power for the whole period of 30 s, % of Power Drop (%PD) as the difference of the PP minus the minimum power divided by the PP (PP-MP/PP).

RESULTS: All anaerobic power parameters showed significant improvements ($P < 0.05$) in the ET condition compared to PT condition (Table).

CONCLUSIONS: Nanobionic t-shirt improves anaerobic power parameters; however the triggering mechanisms that produce these changes should be subject of future research which could explain the physiological basis behind the outcome of the present study.

Mean ± SD and % difference of all anaerobic power parameters for the ET and PT conditions

	Peak power (watt/kgr)	% drop power	RPM max (rev/min)	Mean power (watt/kgr	Post WAnT lactate mmol/l
ET	10.23±2.10	55.08±9.76	193.17±23.10	7.05±1.24	16.05±3.14
PT	10.64±2.00	57.96±8.36	199.08±23.25	7.28±1.17	14.97±2.87
%diff	4.0	5.2	3.1	3.3	-6.8

3377 *Board #98* **June 2** **9:30 AM - 11:00 AM**

Nanobionic Textile T-shirt: Its Effect On The Parameters Of Cardiorespiratory Function

Nikos Dimitriadis, Evagelos Roussopoulos, Georgios Paradisis, Elias Zacharogiannis. *Athens University, Athens, Greece*.
(No relationships reported)

Nanobionic is a high quality technological textile, made of bio-ceramic materials, that reflects back to our body the far infrared rays our body emits. The exposure of living organisms to far infrared radiation has been documented to induce an increase in temperature of the body tissues, dilate cutaneous blood vessels as well as arterioles and venules promoting blood circulation and thus promoting metabolic rate. Although there are published research data regarding the use of far infrared rays to speed up recovery from exercise, reports on their effect on the cardiorespiratory parameters are scarce.

PURPOSE: The aim of this study was to investigate the effects of a Nanobionic t-shirt on the parameters of cardiorespiratory function during exercise.

METHODS: Twenty two (11 men, 11 women) healthy active subjects (age 27.7 ± 4.4 years, body mass 68.3 ± 13.6 kg, body height 173.2 ± 8.7 cm) agreed to participate in the study. A double blind cross over design was used. Cardiorespiratory parameters were determined by continuous exhaustive incremental testing with an open circuit spirometry. This protocol had steps of 2 min and increments of 1km.h-1. After the first evaluation with active t-shirt (ET) or with identical inactive t-shirt (PT) the subjects 7-14 days performed the second exhaustive trial.

RESULTS: Mean values for the ET or PT of VO2max (51.76 ± 6.5 v 49.62 ±6.87 ml.kg-1.min-1) velocity at VO2max (14.61 ± 1.73 v 13.77 ± 1.72 km.h-1), the velocity at the ventilatory threshold (11 ±1.48 v 10.2 ± 1.79 km.h-1), total treadmill time (789.5 k, maximal heart rate and maximal blood lactate concentration (12.19 ± 1.9 v 10.75 ± 1.75 mmol.l-1) and maximal heart rate (191.5 ± 7.9 v 188.9 ± 8.4 b.p.m) were significantly different ($p < 0.01$)

CONCLUSIONS: Nanobionic t-shirt improves cardiorespiratory parameters and endurance performance. The triggering of metabolism through its reflective properties on far infrared rays should be subject of future research and may explain the physiological basis behind the outcome of the present study.

3378 *Board #99* **June 2** **9:30 AM - 11:00 AM**

The Effect of EnergyCare™ Bands on Selected Physical Performance Tests

Andy O'Neill, Anthony Caterisano, FACSM. *Furman University, Greenville, SC*.
(No relationships reported)

BACKGROUND: In today's world athletes attempt to find a product that will improve their health and athletic performance. EnergyCare™ bands, claim to improve athletic performance in a variety of areas such as strength, power, flexibility, speed and balance. Although no previous studies on EnergyCare™ bands have been done, other studies on similar products have produced mixed results**.**

PURPOSE: To determine the effectiveness of EnergyCare™ bands on flexibility, strength, power, speed, and balance**.**

METHODS: College-age males (N=13) were tested in a double-blind format in the areas mentioned above. Students performed five tests: strength (isometric bench press), flexibility (sit and reach), balance (one foot balance test), power (vertical jump), and speed (10 yard dash). Each test was performed five times with five different conditions: those being two active bands (2AB), two placebos (PB), one active leg and one placebo arm (AL), one active arm and one placebo leg (AA), and no bands (NB). Students were randomly assigned condition order and performed all 5 tests in the same order each time. A MANOVA with a Tukey post hoc test was used to analyze the data**.**

RESULTS: There was no significant difference among power, speed, flexibility, and strength across the five experimental conditions. A significant difference exists in the balance tests measured in seconds was as follows: 2AB = 8.52 ± 2.26 (p=.003) , PB = 3.47 ± 0.39, AL = 3.59 ± 0.31, AR = 3.70 ± 0.56, NB = 2.86 ± 0.54**.**

CONCLUSIONS: It appears that EnergyCare™ bands do not have an ergogenic effect on strength, power, speed or flexibility. However, the data suggests that balance may be positively affected when using both the active ankle and wrist bands, which may benefit athletes who compete in sports that emphasize balance.

3379 *Board #100* **June 2** **9:30 AM - 11:00 AM**

The Efficacy of a Lower Limb Compression Garment in Accelerating Recovery from a Marathon Run

Jessica Hill[1], Glyn Howatson, FACSM[2], Ken van Someren[3], Ian Walshe[2], Charles Pedlar[1]. *[1]St Mary's University College, Twickenham, United Kingdom*. *[2]Northumbria University, Newcastle, United Kingdom*. *[3]English Institute of Sport, Marlow, United Kingdom*.
(No relationships reported)

Strenuous physical activity can result in exercise induced muscle damage (EIMD) particularly if the exercise is unaccustomed or of a long duration. The EIMD is characterised by a number of symptoms including muscle soreness, inflammation and reduced muscle function. Numerous interventions have been used to reduce the symptoms associated with EIMD, however few have examined the efficacy of compression garments following sports specific paradigms**.**

PURPOSE: To investigate the efficacy of a lower limb compression garment in accelerating recovery from indices of muscle damage following a Marathon run**.**

METHODS: Twenty four subjects (n= 7 female, n= 17 male, mean ± SD age 42 ± 10 yrs, height 176 ± 8.6cm and body mass 77.4 ± 11.0 kg) completed a Marathon run before being assigned to a treatment or placebo group. The treatment group wore lower limb compression tights for 72 hours following the Marathon run, the placebo group received a single treatment of 15 min sham ultrasound following the Marathon run. Perceived muscle soreness, maximal isometric voluntary contraction (MIVC) and serum markers of creatine kinase (CK) and c-reactive protein (C-RP) were assessed before the Marathon, immediately after, and at 24, 48 and 72 hours post Marathon**.**

RESULTS: All subjects completed the Marathon run (mean ± SD finish time 03:46:45 ± 00:22:00 in the compression group and 03:39:27 ± 00:33:10 in the placebo group). Muscle soreness, assessed using a visual analogue scale, was significantly lower ($p < 0.05$) in the compression group at 24 h post Marathon when compared to the placebo group (13.9 ± 13.0mm and 36.4 ± 11.6mm respectively). There were no significant group effects for MVIC, CK and C-RP ($p > 0.05$).

CONCLUSIONS: There is some evidence to suggest that compression garments result in improved perceptions of recovery. However, the use of a lower limb compression garment does not attenuate markers of muscle damage or inflammation, nor does it accelerate the recovery of muscle function following a Marathon run.