

QI-DIVER PROJECT:

ACUPUNCTURE AND TRADITIONAL CHINESE MEDICINE IN THE FREE-DIVER THERMAL AND EMOTIONAL FINE-TUNING.



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FreeDiving, or breath holding, has been around in one form or another for thousands of years, from pearl search to fishing activities.

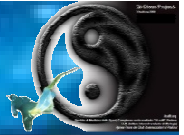


FreeDiving is now mostly an underwater sport where athletes test their own limits of time, depth and distance on one single breath of air.



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Without a proper training, freediving could be considered a dangerous sport. Apart who You're diving with, one of the most common risks in FreeDiving, both directly and indirectly, is a blackout occurrence.



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Introduction:

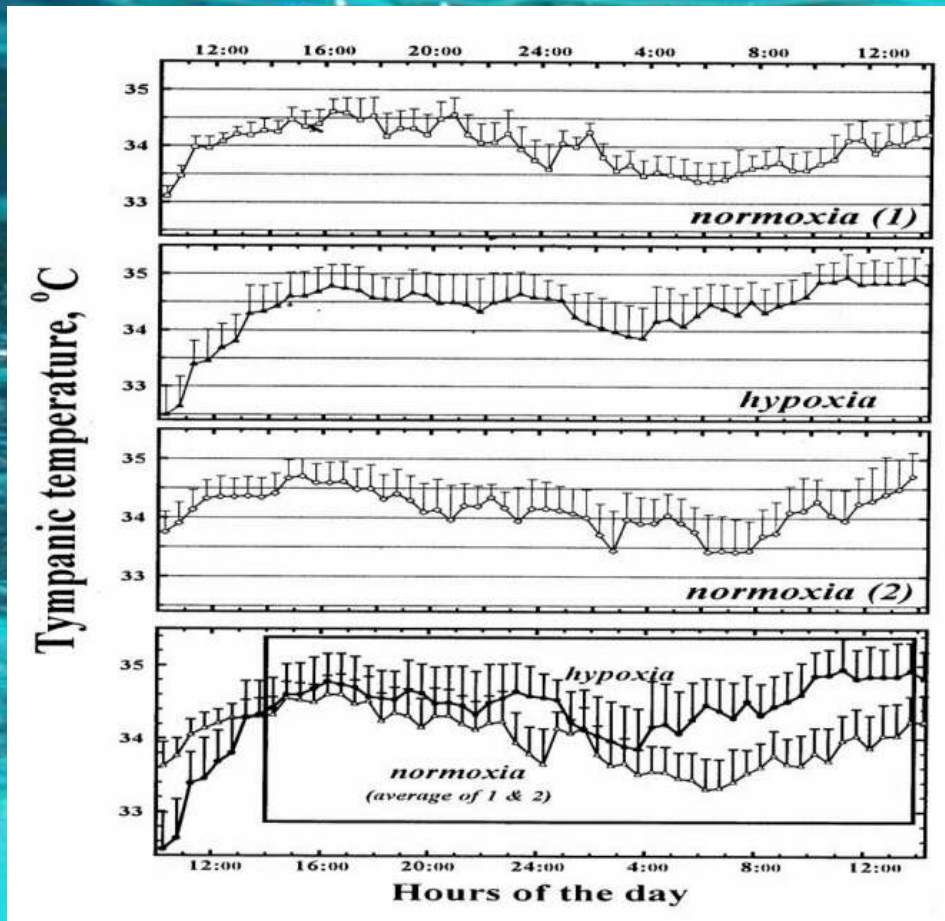
- **In both adult and newborn mammals, acute hypoxia decreases oxygen consumption and blunts shivering and non-shivering thermogenesis (Mortola and Gautier, 1995).**

- **hypoxia lowers the set point of thermoregulation, and interferes with the behavioural means normally utilised for the control of body temperature (Dupre et al., 1988; Gordon and Fogelson, 1991; Mortola and Feher, 1998)**

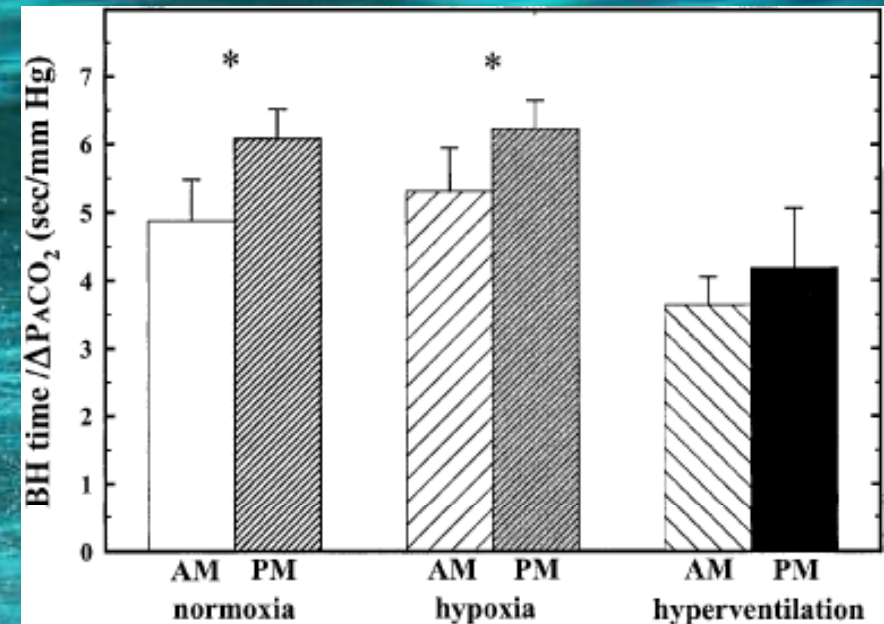


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Bosco G, et al. (2003) Effects of Hypoxia on the Circadian Patterns in Men.
High Altitude Medicine & Biology, 4(3):305-318.

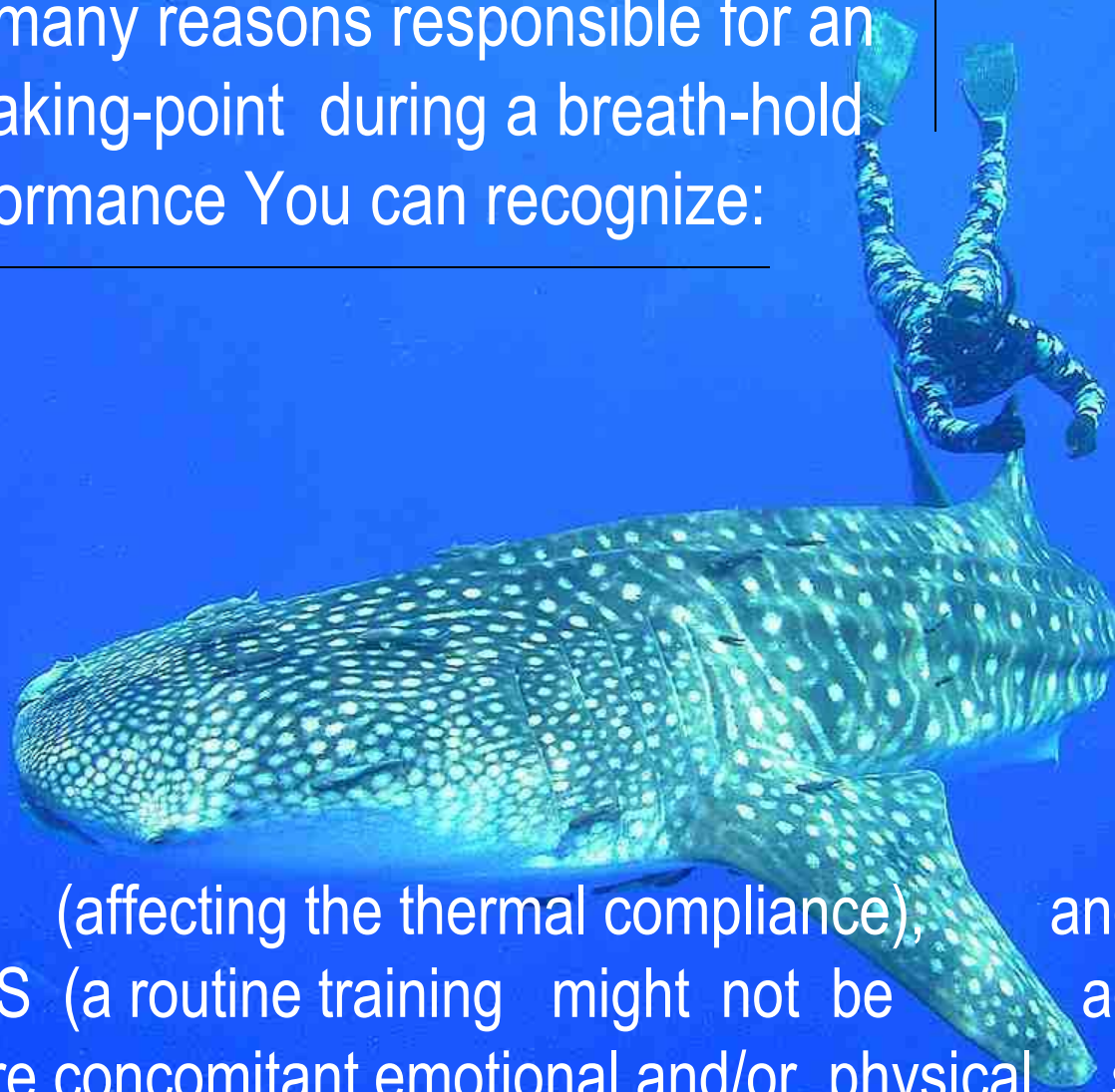
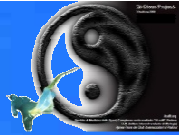


Bosco G, et al. (2004) Voluntary breath-holding in the morning and in the evening.
Clin Sci (Lond), 106(4):347-52.



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Amid the many reasons responsible for an early breaking-point during a breath-hold sport performance You can recognize:



- COLD (affecting the thermal compliance), and
- STRESS (a routine training might not be adequate when there are concomitant emotional and/or physical stress factors).





A 1983's work did showed the onset of an anticipated breaking-point in skindivers pre-treated with acupuncture. All of them suffered from 'shaking shivers' in a worsening thermal compliance.

Source:

M. Schiavon, V. Tegazzin, D. Tietto, F. Marchetti

"APNEA STRESS AND ACUPUNCTURE INDUCED MODIFICATION OF CARDIO-VASCULAR PARAMETERS"

(Proceedings of the 7th International Diving Science Symposium.

"La Garangola" Ed., Sept. 9th 1983:259-267, Padova, Italia)





Traditional Chinese Medicine (TCM):

Often referred as:

Acupuncture

and

Moxibustion

It is:

It is:

Thin, Cold

vs.

Thick, Hot

While TCM is mostly:

Phytotherapy

And other treatment techniques:

Cupping

Tui-Na

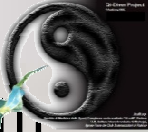
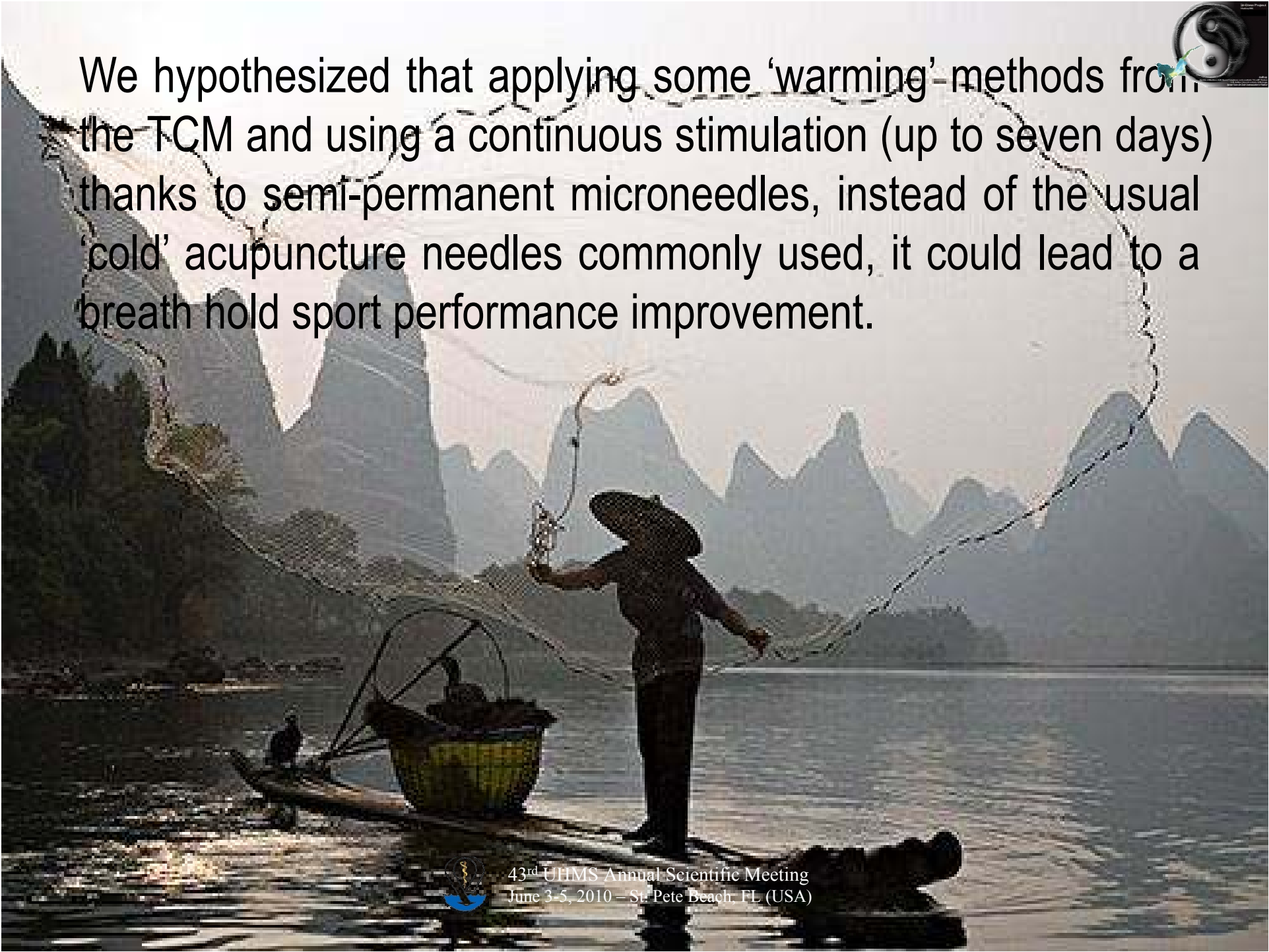
Gua-Sha

AcuTaping

.. Just to mention
some out of them.



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We hypothesized that applying some 'warming' methods from the TCM and using a continuous stimulation (up to seven days) thanks to semi-permanent microneedles, instead of the usual 'cold' acupuncture needles commonly used, it could lead to a breath hold sport performance improvement.



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Materials and Methods:

Tests were performed in a pool in Padua, Italy (Feb-Apr 2009).

Twenty volunteers (15M and 5F) were enrolled in our study after their signing a specific informed consent about our protocol.



Age: 23-56 yo (39.2 +/- 8.69 SD)



Height: 162-184 cm (173.31 +/- 6.49 SD)



Weight: 52.5-95 Kg (72.13 +/- 10.92 SD)

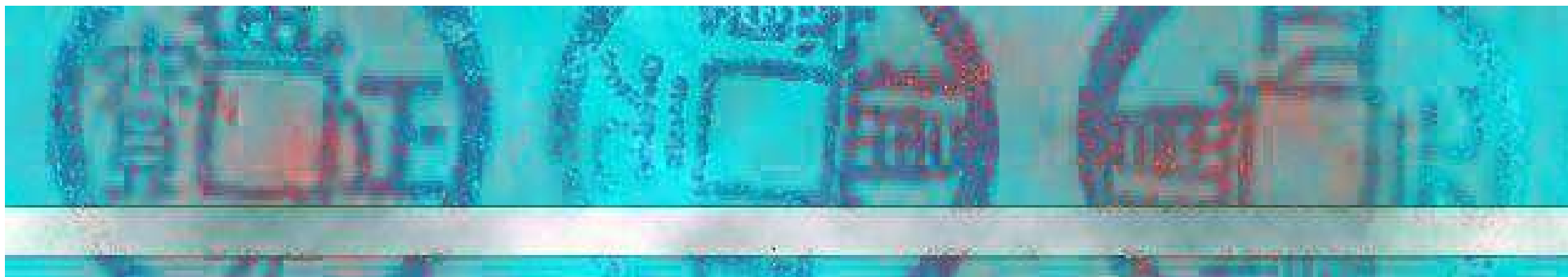


Apnea experience: advanced-elite.





Materials and Methods:



We divided the subjects (n=20) in two groups with an ABCD randomization (yarrow stalks casting):

**A Qi-Diver (Energized 'better centered' divers) group (n=10), and
a Control Group (not-treated athletes) (n=10).**





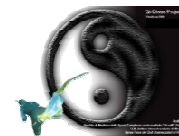
Materials and Methods:

At first we've got some pre-/post- test values from all the participants (BP, HR) and static apnea times.

Treated subjects (QiDivers) received warming systems (eg Cupping and GuaSha, Capsicum Patches and Acu-Taping) and continuous microstimulation (up to 7 days) on specific AcuPoints with very small needles (0.9-1.8 mm); 7 days later we measured again their BP, HR (pre and post-test) and static apnea times.

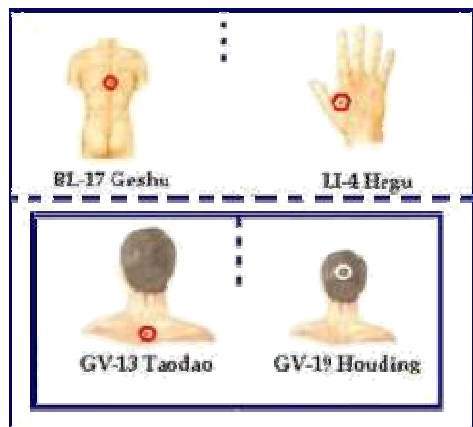
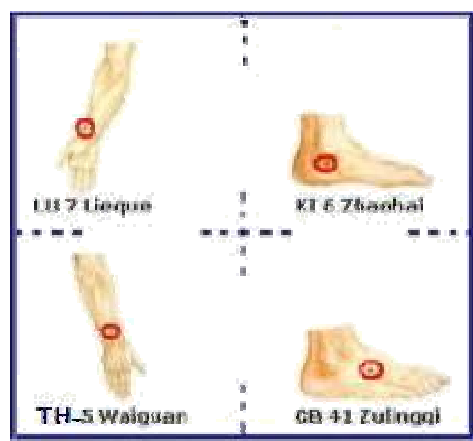
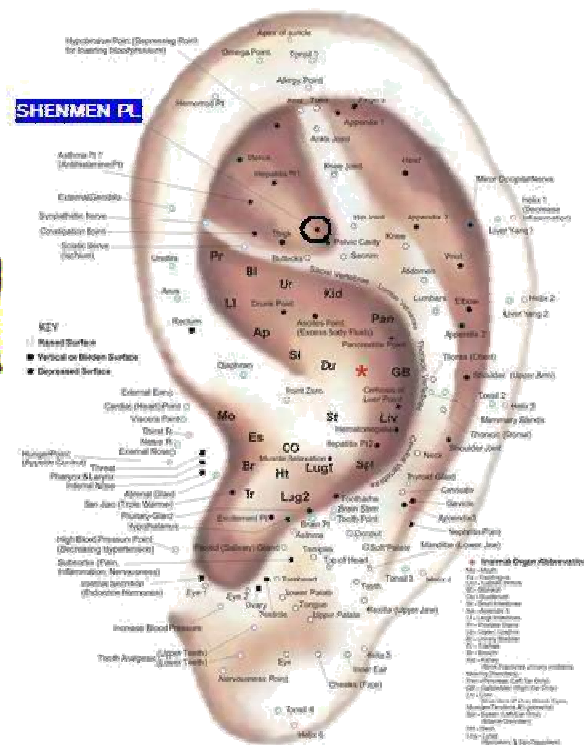
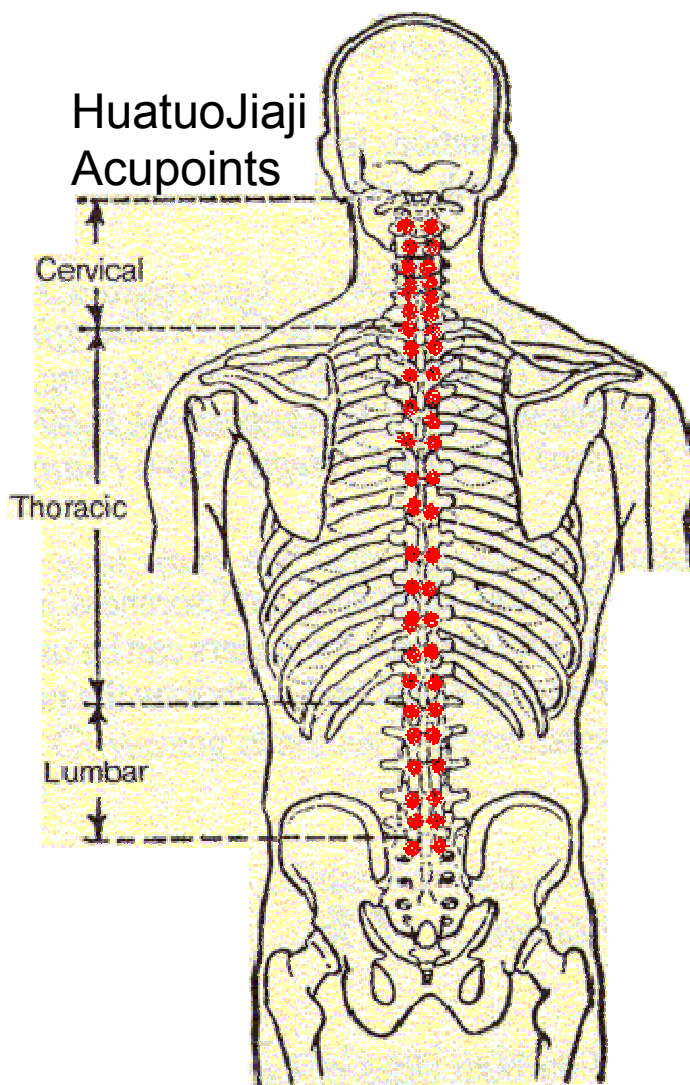
Also the not-treated athletes' parameters (in our Control Group) were controlled on the 7th day from initial test.



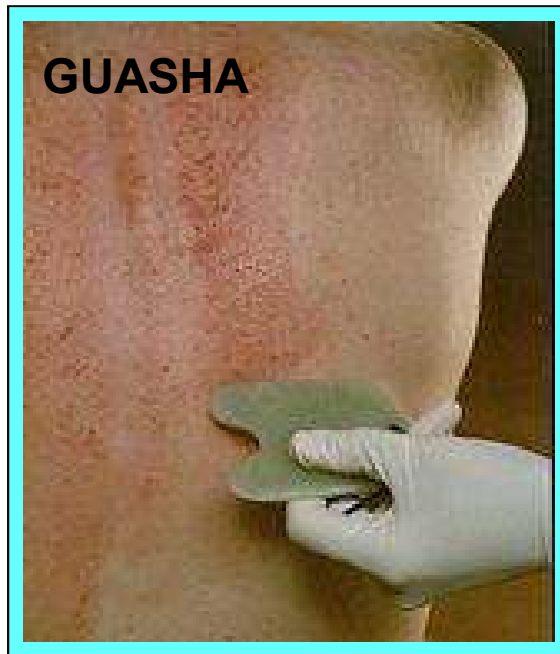
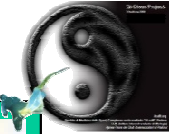


Synoptically, in a single table, we treated:

HuatuoJiaji Acupoints



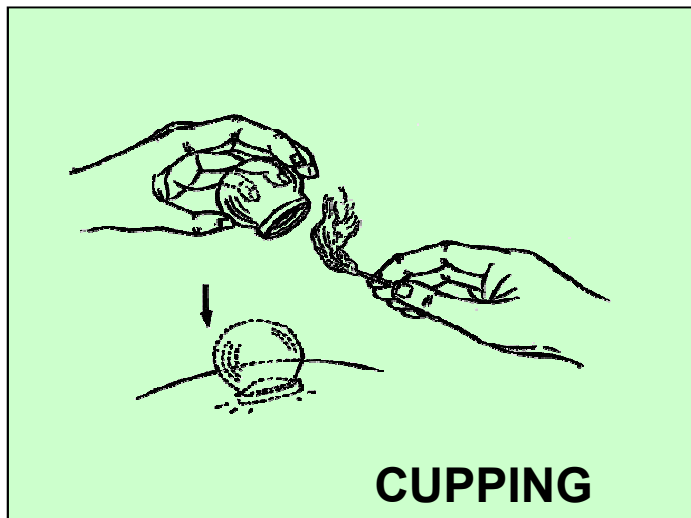
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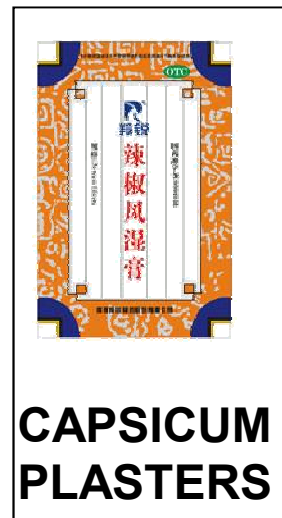
GUASHA



ACUTAPING

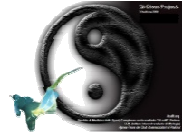


CUPPING



**CAPSICUM
PLASTERS**

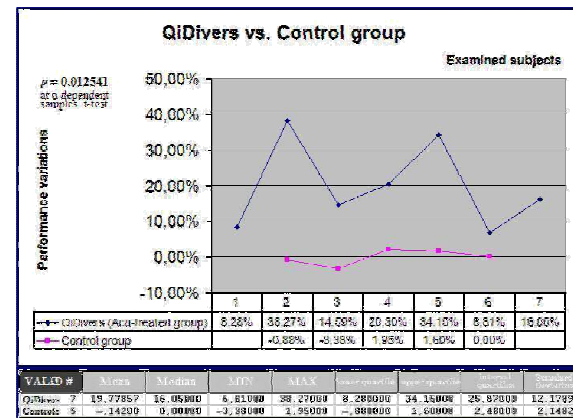




Results:

Among QiDivers static apnea times were improved [19.78% +/- 12.18% SD, and ranging from 6.81 up to 38.27 %].

Control Group static apnea times showed minimal variations [0.14% +/- 2.15 SD, and ranging from a -3.38 up to + 1.95%].



p value was significant ($p < 0.013$).



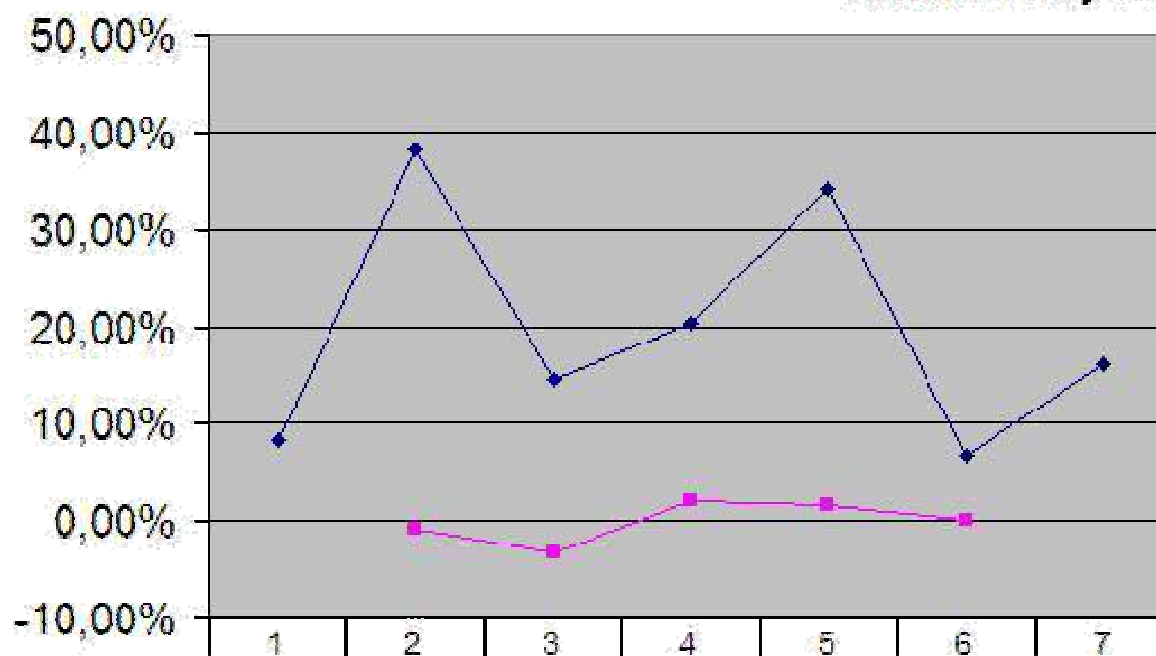


QiDivers vs. Control group

Examined subjects

$p = 0.012541$
at a dependent
samples t-test

Performance variations

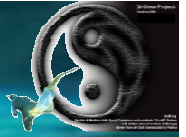


—◆— QiDivers (Acu-treated group)	8,28%	38,27%	14,59%	20,30%	34,15%	6,81%	16,05%
—■— Control group		-0,66%	-3,38%	1,95%	1,60%	0,00%	

VALID #	Mean	Median	MIN	MAX	lower quartile	upper quartile	interval quartiles	Standard Deviation
QiDivers 7	19,77857	16,05000	6,81000	38,27000	8,280000	34,15000	25,87000	12,17899
Controls 5	-1,14200	0,00000	-3,38000	1,95000	-0,880000	1,60000	2,48000	2,14828



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Conclusions:

We measured the best results in the QiDiver group, especially with those that at the 7th day were still wearing $\geq 65\%$ of the previously positioned semi-permanent microneedles.

This benefit seems to be due more to a better sympathetic / parasympathetic modulation than to a direct action on the ventilation capabilities.





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Thanks for Your attention



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