Research Review: Don't forget to slip, slop, slap ... and salute?

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Recommended Citation
Climstein, Mike and Walsh, Joe, "Research Review: Don't forget to slip, slop, slap ... and salute?" (2012). Faculty of Health Sciences & Medicine Publications. Paper 311.

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Don't forget to Slip, Slop, Slap ...and Salute?

Title: How Effective is Sun Salutation in Improving Muscle Strength, General Body Endurance and Body Composition?

Author: Dr Bhutkar et al (Department of Physiology, Karnataka, India)


Introduction: It's 4:45am and I am up for an early surf session (I have to get up so damn early as Queensland will not 'play daylight savings' with the rest of Australia!). It may be early on the Gold Coast, but I've got to run as the visiting NSW folk are an hour ahead and have already coffee'd up and hit the surf.

Yet again I have to navigate my way through the crowd on the beach practicing some type of contortion ritual. Hmm, those taking part range from the young to the old (and I mean old) and appear to be pretty darn flexible. Decision made: sacrifice a couple of waves to see exactly what they are doing. It appears to be stationary, and limited to a repertoire of 10 moves that they repeat. Is that it?

After an hour of catching waves, I decide it's time to hit the internet to investigate further. Wait, must have been a brain freeze - why not simply ask what they are doing? Surveillance suggests the person in the tattered shirt looks the friendliest, so I approach and ask a very simple question, 'what type of contortion are you practicing?' Wrong approach - or she simply doesn't have a sense of humour. Regardless, her reply is straight to the point, 'Sun Salutation'. Oh well - it's a good starting point, and from here I pursue my original intention of investigating further online.

In his study into the effectiveness of the Sun Salutation in improving strength, endurance and composition, Dr Bhutkar states that in Indian culture, yoga is traditionally a part of the daily routine and a critical entity for a healthy life. Suryanamaskar, aka Sun Salutation, is considered an adoration of the sun for health benefit and longevity.

Having watched the group perform the movements, quite effortlessly, I find myself considering that participation may indeed add quality years of life.

Sun Salutation consists of postures performed consecutively with breathing exercises (the article contains illustrations). The cycle consists of 10 movements performed continuously, with each asana (body position) claimed to have a particular health benefit. These are:

- **Step 1:** stretches the thoracic, abdominal and intestinal muscles
- **Steps 2 to 9:** massage the organs, tone nerves and move prana in the lower body
- **Steps 4 and 5:** tone the abs and muscles of legs
- **Step 6:** exercises the spine and strengthens the arms and legs
- **Step 7:** strengthens the shoulders, arms and chest
- **Step 10:** induces a state of introversion.

The Sun Salutation postures are designed to complement one another, while providing a total body workout. The practice is considered to lead to total body strengthening, hence the purpose of Dr Bhutkar and colleagues' study. As a firm believer in progressive resistance training for improving muscular strength, I am intrigued that the postures can improve strength.

**Methodologies:** The researchers recruited 79 sedentary volunteers (49 male), who were free from medical disorders, to participate. The subjects were asked to complete Sun Salutation six days per week for 24 weeks. Initially subjects completed six cycles; this was increased to 24 cycles over 15 days.

Initial and post-study testing consisted of assessment of upper (1RM bench press) and lower body strength (back and leg dynamometer), muscular endurance (number of sit ups and push ups), body composition (bioelectrical impedance) and level of exertion (RPE scale).

**Results:** Post-test results found significant increases in bench press 1RM, shoulder press 1RM, leg dynamometry, muscular endurance (number of sit ups and push ups), body composition (bioelectrical impedance) and level of exertion (RPE scale).

With regard to body composition, males demonstrated a significant loss of body mass (-1.7kg) and percentage body fat (-0.4 per cent); however, they increased lean muscle mass. Females also demonstrated significant improvements in mass (-1.7kg), percentage fat (-1.92 per cent) and lean body mass. Overall, males rated the degree of difficulty of the Sun Salutation
as fairly light (RPE 11), whereas females rated the degree of
difficulty as slightly more difficult (somewhat hard, RPE 14).

Pros: A very good, practical study. The strength gains and
improved body composition changes associated with the
practice of Sun Salutation training were impressive.

Reliability of results was increased as the study was conducted
with relatively good subject numbers, and included both
genders. There was a very low drop-out rate, which is
promising and shows good adherence to this form of exercise.

The study involved each subject completing between 115
and 144 training sessions over a 24-week period. With such
a large amount of training done by previously sedentary
individuals, this is quite an achievement by the investigators.
It helps to give a very accurate picture of some benefits from
Sun Salutations. It should, however, be remembered that
the RPE for the Sun Salutations was not excessively high
and adherence to the exercise was good, demonstrating
the possibility of advantages for general health maintained
across the lifespan.

Pictures of the postures are included in the article. It would be
interesting to see a similar study conducted with Bikram yoga.

Cons: Although the postures incorporate stretching, the
authors did not assess this parameter of fitness. Nor did the
authors include a control group to ensure that the positive
effects did not occur (to some extent) due to external
influences. Also, it would be beneficial to see the benefits
attained in a longitudinal study (i.e. 12 months or longer).

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