

The Acute Effects of Hatha Yoga on Psychological and Physiological Measures Associated with Stress

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ABSTRACT

Objectives: Hatha yoga practices induce relaxation and have been used to alleviate stress-induced disorders such as insomnia, anxiety, and depression. The purpose of the present study is to measure the acute effects of Hatha yoga on psychological and physiological measures associated with stress. **Methods:** Twenty healthy male and female volunteers (20.8±1.0 yrs, 171.8±6.9 cm, 67.2±15.9 kg) participated in this study. Each participant completed a 43-minute session of Hatha yoga and a 43-minute session of studying (which served as the control). Each session was separated by one week. The design was balanced such that half of the participants completed the yoga session first while the other half completed the control session. Heart rate and mood (assessed using an Affect Grid) were measured prior to, immediately after, and thirty minutes after each session. Changes in the dependent variables were assessed in a 2x3 (condition x time) repeated measures ANOVA. **Results:** Heart rate ($p=0.611$) did not change between the pre and post-test measurements (Table 1). Measures of mood significantly interacted ($F_{(2,38)}=8.159$, $p=0.001$) between condition and time. Subsequently, two one-way ANOVAs were performed to assess the changes across time for each condition. Arousal was affected by yoga ($F_{(2,38)}=7.98$, $p=0.001$). Specifically, arousal increased immediately after completing the yoga session but did not persist. However for the control group, arousal did not change ($F_{(2,38)}=0.176$, $p=0.839$). Likewise, the state of pleasure was affected by yoga ($F_{(2,38)}=9.82$, $p<0.001$). Specifically, pleasure significantly improved after completing the yoga session and this effect persisted through the 30-minute post-test assessment. The control group exhibited a small but significant change in the state of pleasure ($F_{(2,38)}=7.66$, $p=0.002$). Specifically the control group exhibited little change immediately after completing the session, but this measure significantly increased at the 30-minute post-test assessment. **Conclusions:** Overall, Hatha yoga did significantly improve psychological state, but not physiological state.

Variable	Control			Yoga		
	Pre	Post	Post 30	Pre	Post	Post 30
HR (beats/min)	71.1 (12.0)	75.6 (15.3)	73.7 (15.2)	76.7 (16.1)	84.7 (19.5)	84.1 (18.0)
Arousal (% max scale)	2.15 (2.15)	4.73 (2.11)	1.85 (2.09)	2.06 (2.43)	4.07 (3.51)	4.09 (3.51)
Pleasure (% max scale)	3.41 (2.53)	1.27 (2.52)	4.84 (2.55)	2.92 (2.77)	4.75 (4.03)	4.66 (3.53)

The mean (SD) of HR (beats/min), arousal and pleasure (% max scale) across three time periods for both control and yoga conditions.