

# 常溫 and 熱水浴浸泡對心血管與體溫變化影響之研究

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## 摘要

熱水浴浸泡及其他熱療方式的應用已成為休閒領域的熱門營業項目。本研究旨在探討比較熱水浴(41℃)和常溫水浴(36℃)浸泡對心血管及核心體溫變化之影響。實驗對象為健康大學生，男性有 6 位，女性 10 位，共計 16 人。研究實施之水浴浸泡時間為 15 分鐘，檢測項目包括口溫(表示核心體溫)、心跳速率、心收縮壓和心舒張壓。結果顯示，36℃ 常溫水浴浸泡 15 分鐘後之對照組，其心舒張壓從  $74.4 \pm 1.536$  mmHg 降低至  $64.0 \pm 1.145$  mmHg，而其他參數則無明顯變化。相對地，41℃ 熱水浴浸泡組之心收縮壓最大變化從  $118.5 \pm 2.621$  mmHg 降低至  $106.5 \pm 1.258$  mmHg，且心舒張壓最大變化從  $77.3 \pm 1.995$  mmHg 降低至  $57.5 \pm 0.477$  mmHg，兩者呈現明顯降低現象。反之，心跳速率最大變化從  $72.5 \pm 1.821$  beats/min 增加至  $127.0 \pm 2.547$  beats/min，且核心體溫最大變化從  $36.96 \pm 0.048$  °C 增加到  $38.62 \pm 0.036$  °C，兩者呈現增加趨勢。綜合結果顯示，41℃ 熱水浴浸泡導致核心體溫的升高並伴隨著周邊血管的擴張作用，可能是造成心血管系統功能的一過度負荷之不良因素。本研究建議，提供浸泡之熱水浴溫度最好不要超過 40℃，且應留意熱水浴浸泡後伴隨之姿態性低血壓對顧客安全的影響。

關鍵詞：水浴浸泡、心血管反應、體溫過高

# **Cardiovascular and Thermoregulatory Responses to Thermoneutral and Hot Water Immersion in Young Students**

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## **ABSTRACT**

Hot water immersion and other heat application have become popular methods of recreation. This study was designed to determine human cardiovascular responses to a 15-min bath at hot water immersion at 41 °C compared with a thermoneutral water immersion at 36 °C. The oral temperature (OT, represented core temperature), heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were measured in 10 healthy young females and 6 healthy young males immersion at two different water temperatures 36 °C and 41 °C. Fifteen minutes after the thermoneutral water immersion, the DBP was tended to decrease (from 74.4±1.536 mmHg to 64.0±1.145 mmHg), but all other variables were showed no significant change. The maximal changes after entering the 41 °C water immersion, the SBP (from 118.5±2.621 mmHg to 106.5±1.258 mmHg) and DBP (from 77.3±1.995 mmHg to 57.5±0.477 mmHg) were decreased while HR (from 72.5±1.821 beats/min to 127.0±2.547 beats/min) and OT (from 36.96±0.048 °C to 38.62±0.036 °C) was increased. We conclude that bathing at 41 °C more than 15 min may induce remarkable enhancement in core body temperature and the cardiovascular system. These results suggest that hyperthermia vasodilatation induced by immersion in above 40 °C hot water may become a risk factor to imbalance the cardiovascular system and may induce the postural hypotension when standing to exit the bathing tub.

**Keywords:** Water Immersion, Cardiovascular Response, Hyperthermia