

INTISARI

Selama masa pandemi COVID-19, tenaga kesehatan diharuskan bekerja menggunakan alat pelindung diri (APD). Namun, penggunaan APD justru berpotensi menimbulkan ketidaknyamanan dan meningkatkan risiko *heat strain*. Konsumsi *ice slurry* ataupun *cold drink* yang dilakukan setelah aktivitas fisik dilaporkan dapat membantu penurunan *heat strain*. Namun, bagaimana pengaplikasiannya setelah aktivitas fisik masih belum banyak diteliti. Dari uraian tersebut, penelitian ini bertujuan untuk menganalisis pengaruh dari pemberian konsumsi *ice slurry* maupun *cold drink* yang dilakukan setelah aktivitas fisik terhadap penurunan *heat strain* yang dialami tenaga kesehatan ketika mengenakan APD, baik secara fisiologis maupun subjektif.

Subjek pada penelitian ini terdiri dari sepuluh mahasiswa laki-laki berusia $21,2 \pm 0,1$ tahun. Subjek diminta melakukan aktivitas fisik berjalan di atas *treadmill* selama 40 menit dengan kecepatan yang disesuaikan dengan perhitungan beban kerja setara dengan 65%HRMax dengan mengenakan APD level 3 di lingkungan bersuhu 24-26°C, 40-60% *relatif humidity* (RH). Setelah aktivitas fisik, subjek kemudian diminta untuk beristirahat sebagai fase pemulihan dengan pemberian *cold drink* (COLD), *ice slurry* (ICE), atau tanpa pemberian *cooling* (CONT).

Hasil penelitian menunjukkan bahwa konsumsi *ice slurry* memiliki kinerja yang lebih baik dalam menurunkan *heat strain* yang dialami subjek, baik secara fisiologis maupun subjektif dibandingkan dengan *cold drink*. Berdasarkan respons fisiologis, konsumsi *ice slurry* mampu mempercepat proses pemulihan *heart rate*, temperatur timpani, rata-rata temperatur kulit, dan *physiological strain index* dibandingkan dengan *cold drink*. Begitupun berdasarkan respons subjektifnya, konsumsi *ice slurry* mampu menghasilkan sensasi termal dan *perceptual strain index* yang lebih rendah, serta kenyamanan termal yang lebih baik daripada *cold drink*. Dari hasil penelitian ini, dapat disimpulkan bahwa konsumsi *ice slurry* dapat digunakan sebagai salah satu metode *post-cooling* yang efektif dalam menurunkan *heat strain* saat mengenakan APD level 3.

Kata Kunci : alat pelindung diri, *ice slurry*, *cold drink*, respons fisiologis, respons subjektif, *heat strain*, *post-cooling*

ABSTRACT

During the COVID-19 pandemic, healthcare workers (HCWs) must work wearing a set of personal protective equipment (PPE). However, wearing PPE can potentially causes discomfort and increase the risk of heat strain. Ingestion of ice slurry or cold drink after physical activity has been reported to reduce heat strain. However, how is it applied after physical activity has not been widely studied. This study aims to analyze the effect of ice slurry and cold drinks ingestion after physical activity for HCWs that wearing PPE to reduce physiological and perceptual heat strain.

The participants of this this study consisted of ten male students aged 21,2 ± 0,1 years. Participants performed 40 minutes treadmill exercise at a speed that was adjusted to the calculation of the workload equivalent to 65%HRMax. They performed the exercise by wearing a set of level 3 PPE at 24-26°C temperature environment, 40-60% relatif humidity (RH). After that, participants were asked to rest as a recovery phase by giving cold drinks (COLD), ice slurry (ICE), or without cooling (CONT).

The results showed that ice slurry ingestion had a better performance in reducing physiological and perceptual heat strain, compared to cold drinks. Based on physiological responses, ice slurry ingestion is able to accelerate the recovery process of heart rate, tympanic temperature, skin temperature, and physiological strain index, compared to cold drinks. Likewise, based on subjective responses, ice slurry ingestion provided a lower thermal sensation and perceptual strain index, as well as better thermal comfort than cold drinks. From these results, it can be concluded that ice slurry ingestion can be used as an effective post-cooling method in reducing heat strain when wearing a set of level 3 PPE.

Keywords : personal protective equipment, ice slurry, cold drink, physiological response, subjective response, heat strain, post-cooling