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PANUPONG PUDTHASA :PHYSIOLOGICAL RESPONSES OF FABRIC COLOR DRESSING UNDER SOLAR HEAT LOAD. THESIS ADVISORS : CHALERMCHAI CHAIKITTIPORN, Dr.P.H., CHOMPUSAKDI PULKET, Ph.D., VAJIRA SINGHAKAJEN, M.A., SOMPOL SA-NGUAN RUNGSIRIKUL, M.S., M.D. 106 p. ISBN 974-661-829-6

Twenty - six healthy male subjects as volunteers exercised with work/rest schedule of 10 minutes exercise on a cycle ergometer (110 W or 374.57 BTU) followed by 5 minutes rest continuously for 90 minutes under natural sunshine conditions. Their backs were exposed to the sun with an average intensity of 915.93 w/m^2 hr or 3118.90 BTU/ m^2 hr. Each subject took part in four experiments. Subjects wore long sleeved shirts and trousers made of 100 % cotton (insulation value=0.6 CLO), a white loose fitting garment (WL),a black loose fitting garment (BL),a white tight fitting garment (WT) and a black tight fitting garment (BT).

Main results are summarized as follow : 1) Under loose fitting conditions, both of fabric colors (WL, BL) were equally suitable for working outdoors, as shown by the lack of significant difference (p-value > 0.05) of subjects'total weight losses, incremental heart rates, incremental rectal temperatures, heat storages, thermal sensations and comforts. 2) Under tight fitting conditions, the effects of fabric color might be important as shown by the fact that subjects had significantly higher when wearing BT than when wearing WT (p value=0.002), but there were no significant differences in subjects' total weight losses, incremental rectal temperatures and heat storages. 3) The black tight fitting garment was shown to have the worst effect on the wearers' health as indicated by the fact that it produced the highest psycho-physiological responses in wearers; total weight losses, incremental heart rates, incremental rectal temperatures, heat storages, thermal sensations and comforts. Therefore the light colored fabric should be used for exercise clothing that is designed to fit tightly.