PHYSICAL FITNESS AND EUSTRESS IN THE ADVENTURE ACTIVITIES OF ROCK CLIMBING AND RAPPELING

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The primary purpose of this study was to compare the physiological and psychological responses for low-fit and high-fit males in situations of eustress. A series of three-hour rock climbing/rappelling sessions were chosen as the eustress treatment, since these activities have often been cited as producing a positive stress response.

Twelve males enrolled as undergraduates at Texas A&M University who had no prior rock climbing or rappelling experience served as volunteer subjects. Volunteers were tested for maximal oxygen uptake following the Bruce Protocol on a motorized clinical treadmill, and subjects were selected from the pool of volunteers who tested as 'low fit' (VO2 max < 42 ml/kg) (n=6) or 'high fit' (VO2 max > 52 ml/kg) (n=6). Upon selection, each subject was given the Spielberger Trait Anxiety Inventory (STAI). Four three-hour urine samples were collected to establish catecholamine excretion levels for a baseline (B), an anticipatory session (A) without significant physical involvement, and initial climbing and rappelling experience (C1), and a third climbing and rappelling session (C3). Each sample was collected for the same time period on four different days. The Spielberger State Anxiety Inventory (SSAI) was given at the end of each of these four sessions. During the first and third climbing sessions, pre and post heart rates were recorded for belaying, climbing, and rappelling. Urine samples were analyzed for epinephrine (E) and norepinephrine (NE) excretion levels using liquid chromatography.

ANOVA for E revealed a significant difference across treatments (F=5.58, p < .01) with Duncan's test for multiple comparisons indicating that C1 and C3 were greater than the baseline measure. For NE there was a significant groups x treatment interaction (F=19.30, p < .05), with the test for simple main effects indicating a greater NE level at C3 for low-fit subjects. There was no difference between groups on the STAI, but there was a significant main effect for treatments on the SSAI (F=49.64, p < .01). Responses differed from B to A, B to C1 and C3, and from A to C1 and C3. There were no differences from C1 to C3. Several significant differences between fitness levels were indicated for heart rates. Interestingly, the SSAI responses did not correspond to the patterns exhibited by E, NE or heart rate.

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HEART RATE RESPONSES TO HIGH ROPE COURSE EVENTS

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The purpose of the study was to examine the heart rate response of male and female college students on five high ropes course events and to rank the events according to stress induction as indicated by heart rate response.

Ten male and four female students with a mean age of 19.07 years who had no prior experience on a ropes course served as volunteer subjects. Each subject was measured for VO2 max on a motorized treadmill using the Bruce Protocol. All subjects were found to be of average to above average aerobic fitness level. At the ropes course, heart rates were monitored continuously using a portable telemetry system while subjects participated on five high ropes events. All events were between 20 to 25 ft. above the ground. Data was collected over a three week time period.

A significant difference (p < .01) was found between the mean max heart rate elicited by the 'Pamper Pole' (200.93) and all other events. The rank order of max heart rates was: 'Pamper Pole' = 200.93, 'Zip Line' = 190.71, 'Heeby Jeeby' = 182.00, 'High Tension Traverse' = 180.21, and 'High Beam' = 170.79. All but three subjects reached a sixty percent intensity threshold in each of the five events.

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THE INFLUENCE OF SEQUENCED INITIATIVES AND CHALLENGE COURSE ACTIVITIES ON SELECTED CHARACTER TRAITS AND SELF CONCEPT

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A majority of the studies looking at the impact of adventure education programs have evaluated programs involving a variety of activities. Therefore, an investigation of a program containing only sequenced initiatives and challenge course activities seemed warranted. The two questions of interest to this investigation were: (1) does a semester of participation in a sequenced initiative and challenge course program effect any change in selected character traits or self-concept? and (2) is there a difference between the responses of males and females? Two studies were conducted.

Study #1: A survey instrument was developed and administered in a pre-test post-test format to 396 students (163 females and 233 males) in Venture Dynamics classes (initiatives and ropes course). The self-report instrument asked for ratings from "low" to "high" on a blank 10 cm line. The 10 characteristics measured were: self-confidence (a), leadership ability (b), ability to communicate within a group (c), ability to trust other class members (d), self-esteem (e), willingness to attempt challenging tasks (f), awareness of one's own limits (g), willingness to give support and encouragement (h), physical fitness level (i), and interest in outdoor adventure activities (j). MANOVA revealed differences for both gender (F=16.28, p < .0001) and treatment (F=48.77, p <.0001). Increases from pre to post-test were found for all characteristics except f, h, and j. Differences between males and females were found for characteristics a, b, f, i, and j with males having a consistently higher self-rating.

Study #2: The Tennessee Self-Concept Scale was given in a pre-test post-test format to students in three Venture Dynamics classes (32 females and 34 males), as well as students in three physical education activity classes (volleyball, soccer, and archery) to constitute a control group (19 females and 33 males). Data analysis showed no difference between groups for the pre-test scores. Analysis of difference scores from pre to post-test revealed a significant difference between groups in the 'moral-ethical self' section (F=195.72 p < .05), and a significant group x gender interaction for the 'positive physical self' section (F=234.49 p < .01). The test for simple main effects showed the females' difference scores to be the greatest. At the very least, subjects in the experimental groups perceived positive changes in themselves over the course of the semester.

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ADVENTURE THERAPY: PERCEPTIONS OF PATIENTS, THERAPISTS, AND PSYCHIATRISTS

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Since adventure therapy is relatively new, it is important to learn how it is being perceived by patients and mental health professionals. Therefore, the purpose of this study was to categorize and compare the perceptions of adolescent patients, therapists, and psychiatrists concerning the adventure therapy program at a psychiatric hospital in a metropolitan area in Texas.

A structured interview was audio recorded with 21 teenage patients, 8 licensed therapists, and 14 psychiatrists. All patients interviewed had been participants in the adventure therapy program while in residence at the hospital. Each interview was conducted by the same investigator using open ended questions which provided no direction for any particular response. The interviews were transcribed and the statements subjected to inductive analysis.

Responses from each of the three populations were organized into two categorization schemes. Categorization scheme I: relational components and personal components; and categorization scheme II: perceived program benefits, perceived success dependents, perceived program weaknesses. All three populations identified teamwork, accomplishment, and self-esteem/self-confidence as perceived outcomes of the adventure therapy program with similar frequency. However, the patients mentioned their experience of trusting others and sharing experiences with caring instructors with greater frequency than any other program component. Responses from the therapists and psychiatrists pointed to the need for systematic cooperation between a patient's various therapists, counselors and doctors.

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NEUROENDOCRINE REACTIVITY DURING THE NATURALISTIC STRESS OF AN OUTWARD BOUND COURSE

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Recent studies have found positive correlations between high hostility propensity and increased catecholamine activity during laboratory stressors. The present investigation sought to determine if such correlations would be found in the naturalistic setting of an Outward Bound experience, and if aerobic fitness would also be an influencing variable.

Data collected from subjects (31) during four nine-day 'adult intensive' North Carolina Outward Bound courses included estimates of hostility propensity using the Cook-Medley Hostility Inventory; aerobic fitness estimates using the University of Houston Non-Exercise Test (utilizes factors of gender, age, skinfold measurements, and activity coding); several 3-5 hour urine samples with corresponding measures of state anxiety using Spielberger's State Anxiety Inventory - short form (SSAI). Urine and state anxiety measures were collected for the following activities: rockclimbing, whitewater canoeing, ropes course, off-trail backpacking, communting from airport to base camp and back, and one night-time sleep sample. Urine was assayed by high-pressure liquid chromatography with electrochemical detection to determine levels of excreted epinephrine (E), norepinephrine (NE), and cortisol (CT). The catecholamines were then quantified by creatinine excretion levels.

Of the 31 subjects, nine were classified as high hostile (HiHo), nine as average hostile (AvHo), and 13 as low hostile (LoHo). The classifications for aerobic fitness were: 20 high fit (HF), seven average fit (AF), and 4 low fit (LF). There were 14 females and 17 males. The ropes course activity elicited the highest SSAI response, the second day of canoeing the highest NE and CT response, and the second day of both canoeing and climbing elicited the highest E response. When the data were analyzed by fitness level, there was no difference for CT; for E, LF had a higher response (p < .01) for the second day of climbing; and for NE, LF had higher responses (p < .05) for the hike, first climbing day, first and second canoeing day, ropes course, and van ride back to airport at end of the course. When the data were analyzed by hostility propensity, CT was the only variable with significant differences. The LoHo subjects had higher CT responses for the first climb day and the van ride back to the airport. By gender, the data showed the females had higher CT excretion for the ropes course (p < .05), and higher SSAI levels for the first climb day and the ropes course (p < .05). When analyzed by age, the data revealed only a greater NE excretion for the older subject group during the night sample.

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