

ABSTRACT

Background: Childhood parental loss, parental separation, poverty and rearing in orphanages have negative impact on physical, psychological and social well-being in orphans. Yoga has a profound knowledge base and practical solutions for such traumatic consequences.

Aim: The aim of the study was to evaluate the effect of a yoga program on the physical fitness, psychological and social well-being of adolescents staying in an orphanage.

Methods: A total of 72 apparently healthy adolescents from an orphanage were randomized (based on their age and gender) and allocated into two groups as Yoga Group (YG) (n = 40; 14 girls, 26 boys, age = 12.69±1.35) and Wait-list Control Group (WLC) (n = 32, 13 girls, 19 boys, age = 12.58±1.52). The YG underwent three months of yoga program in a schedule of 90 min. per day, four days per week whereas the WLC group underwent day to day activities. Assessment was done in both groups at the beginning and end of the program.

Results: Physical fitness (Euro-fit physical fitness test): The group*time interaction analysis showed significant ($p < 0.05$) positive differences in Flamingo left leg balance (FLL), Flamingo right leg balance (FLR), Left hand tapping test (PTL), Right hand tapping test (PTR), Sit and Reach (SAR), Standing broad jump (SBJ), Sit-ups (SUP), Band arm hand test (BAH) and Shuttle-run (SHR) in YG compared to WLC group. Within group comparisons, post-hoc test with Bonferroni adjustment showed significant reduction in FLL and improvement in PTL, SBJ, SUP, LHS and RHS in the both groups whereas significant ($p < 0.001$) improvements in FLR, PTR, BAH and SHR were found only in YG. A significant ($p < 0.001$) decrement was found in SAR in WLC group.

Minimum muscular fitness was assessed using the Kraus-Weber test that the percentage of students passed in YG were 20 %, and 75 % in pre and post tests respectively whereas percentages in control group remained the same (40.6%) in both tests. Mc Nemar test shows

significant differences between pre and post ($p < 0.001$) in YG while those in WLC was not significant.

Cognitive functions: The group*time interaction result showed significant differences ($p < 0.05$) in Stroop word (STROOP_W), Stroop color (STROOP_C) and Stroop color and word (STROOP_CW), Digit Span Forward (DS_F), Digit Span Backward (DS_B), Digit Span Total (DS_T), Trial Making Test-A (TMT_A), total and net score of Six Letter Cancellation Test (SLCT) whereas there were no significance in Trial Making Test-B (TMT_B), wrong score of SLCT and in all sub tests of Digit letter Substitution Test (DLST) and Digit Symbol Substitution Test (DSST). Within group comparisons, post-hoc test with Bonferroni adjustment showed that there were significant improvement ($p < 0.001$) in domain score for STROOP_W and STROOP_C, DS_F, and ($p < 0.05$) in DLST in both the groups, whereas Total and net score of SLCT, total score of DSST, DS_B, TMT_A, and TMT_B were improved significantly ($p < 0.001$) only in YG.

Psycho-social variables: The groups*time interaction showed significant changes ($p < 0.05$) in the scores of State Trait Anxiety Inventory for children (STAI-C), Aggression scale (AS), Barratt's Impulsive scale-Brief (BIS); whereas there were no significant change found in Children's Depression Inventory-2 (CDI), Rosenberg Self Esteem Scale (RSES), Children's Loneliness Scale (CLS) and Children's Assessment of Mindfulness (CAMM). Within group comparisons, post-hoc test with Bonferroni adjustment showed significant improvements ($p < 0.001$) in scores for STAI-C, CDI, AS, BIS, RSES and ($p = 0.012$) in CAMM in YG whereas significant changes ($p < 0.05$) were observed in CDI, AS and RSES where as no significant differences were found ($p > 0.05$) in STAI, BIS, CAMM in WLC group. The between groups post vs. post result showed that there were significant changes ($p < 0.05$) in the scores of STAI-C, AS, BIS, and in CAMM whereas there were no significant difference in ($p > 0.05$) in CDI and RSES.

Conclusion: The overall results suggested that the three months yoga program was found useful for the young orphan adolescents in improving physical fitness, cognitive functions and psycho-social parameters of orphan adolescents. Yoga may prove to be a simple, yet important, method of enhancing orphan's various aspects of health.

Key words: orphan yoga adolescents euro-fit executive functions anxiety depression self-esteem aggression impulsivity loneliness mindfulness