BOOSTING THE CD_4 COUNT IN HIV INFECTION: COMPARATIVE EFFECTS OF HIGHLY ACTIVE ANTI-RETROVIRAL THERAPY (HAART) AND DIFFERENT MODALITIES OF PHYSICAL EXERCISE ON BIOMARKERS OF IMMUNITY

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Background: A decline in the CD_4 count is a common feature in HIV/AIDS, suggesting a compromise in immunity of patients. In response, highly active antiretroviral therapy (HAART) is prescribed to slow-down a diminution in the CD_4 count and risk of AIDS-related malignancies. However, exercise may improve both the utility and population of innate immune cell components, and may be beneficial for patients with HIV infection. Comparing the effects of different exercises against HAART, on CD_4 count, helps in understanding the role and evidence-based application of exercises to ameliorate immune deficiency.

Methods: Eighty-nine patients attending the HIV clinic at Enugu State University Teaching Hospital Parklane, Enugu, were studied in a single-blind, randomized controlled trial. The study measured the response of the patients' CD_4 count before and after 6 weeks of moderate-intensity aerobic (MIA) exercises, progressive resistance (PRE) exercises, and without exercise (control), involving subgroups of patients on HAART and HAART naive, respectively. All patients gave written informed consent after ethical approval was obtained and were educated on the use of the Borg rating of perceived exertion scale. They exercised at a rating of perceived exertion of 10 to 13 (interpreted as light to somewhat difficult) thrice weekly, at 30 minutes per session. Data collected were analyzed by using repeated ANOVA and least significant difference for post hoc comparison at $P < 0.05$.

Results: There was a significant "within-subject" interaction effect for exercise and CD_4 count ($P < 0.0001$) such that the CD_4 count increased in all patients (HAART and HAART naive) on exercise (MIA and PRE) and decreased in patients who did not exercise, with equal effect size ($d = 0.37$), respectively. The highest positive and negative change factor for CD_4 count was recorded in the control group that was on HAART (19.68%) and the MIA exercise group that were HAART-naive (–17.76%). However, whereas the PRE and MIA HAART and HAART-naive exercise subgroups recorded increases in CD_4 count, the HAART and HAART-naive control subgroups recorded decreases in CD_4 count.

Conclusions: These results suggest that an exercise (MIA and PRE) prescription for patients on HAART boosts their CD_4 count. Importantly, CD_4 count may be boosted more by MIA than by PRE exercises in patients on HAART and HAART-naive, respectively. The change factor suggests supports this conclusion and the effect size are of clinical significance.

Key words: clinical research Nigeria, clinical trial, developing country, HAART, HIV.

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