Physical Education has been compulsory and examinable in Kenya's teacher education colleges at diploma level since 1980. The programme is geared to, among other aims, improve and maintain the learner's bodily health and fitness. This study, therefore, aimed at establishing the health-related fitness levels of the teacher trainees at Kenya Science Teachers College (KSTC). The sample comprised of 40 first years, 40-second years and 40 third year KSTC teacher trainees split equally between male and female subjects. An experimental research design was used in this study. A pre-test was carried out two weeks after opening in January 1997 while a post-test was carried out eight weeks later. All the subjects were exposed to Physical Education lessons which were taught by KSTC Physical Education Lecturers. The dependent variables included cardio respiratory endurance, muscular endurance, body composition and flexibility. The data was analyzed using descriptive statistics and t-test technique. The results were tested at p<0.05. Generally, the subjects under study improved in cardio respiratory endurance, muscular endurance, body composition and flexibility after an eight week exposure to the Physical Education Programme. This implies that the diploma programme in Kenya is capable of improving health-related fitness levels of the teacher trainees. It is recommended that Physical Education be encouraged in all learning institutions for purposes of enhancing the learners' health status.