DISCUSSION OF FINDINGS

It may be revealed from the statistical analysis of the obtained data that the items of specific physical fitness battery i.e. Right hand grip strength, Sit and reach, Sit ups, 30 meters run, Standing broad jump and Pull-ups, were highly contributory factor towards the performance of Judokas. The significant combined effect of these tests upon judo performance may be attributed to the fact that the Judo abilities depend to a greater extent upon grip strength, muscular endurance, explosive speed, flexibility and explosive strength of arms and legs.

It may be observed that reliability co-efficient obtained for different test items of specific physical fitness test of Judokas, ranged from 0.72 to 0.99. The highest reliability co-efficient of 0.99 was obtained for sit and reach test. While the lowest co-efficient of 0.72 was obtained for 30 meters run. The difference of value between test items may be due to the effect of extraneous factor like motivation, skill, technique and condition of muscles etc. during the actual performance of these test items. The same factors might also had effected the coefficient value of test items, ranged from 0.83 to 0.99. The highest objectives coefficient of 0.99 was obtained for sit and reach test. The lowest coefficient of 0.83 was obtained for pull-ups. As the values obtained for reliability and objectivity coefficient for specific test items were closer to the perfect significant value. Hence these coefficient values had established the batter for specific physical fitness test for judokas was highly reliable and objective.

The validity of the test battery was established by using three types of validity i.e. factor analysis as construct validity, comparison validity and logical validity. The data collected in first phase for twenty
two test items were analysed through factor analysis, in which the principal axis method of rotation was carried out after the completion of inter correlation among 22 physical fitness variables. Five factors emerged from twenty two variables and rigen values (latent root) following the factorization and termination, after the fifth factor came down to less than one. In factor-I of rotated factor analysis the highest loading value obtained for right hand grip strength among eight test items. The fact that the forearm strength is essential for Kumi-Kata (gripping) and played a significant role during Judobout, lasted for five minutes. The highest loading test item found among six items in factor-II, loading was of sit and reach test. The fact that flexibility is a prominent factor during Judo performance, specially during ground and standing techniques. The factor-III, reveals that sit-ups test item emerged as highest loading factor among six test items. The fact that sit-ups represented muscular endurance which is vital factor during Judo performance, as Judoka is required to fight for five minutes without any break in between. In factor-IV, two test items were found suitable for specific fitness test battery i.e. 30 meters run and standing broad jump. In fact, both the components are dependent on each other for their combined effect on Judo performance is very significant, for application of any standing technique. However, explosive leg strength had dominance over speed ability. Hence 30 meters run may be considered as an additional test item for specific physical fitness battery for Judokas. Factor-V reveals that pull-ups item emerged as highest factor loading item among three test items. As pull-ups represented the component of arm and shoulder strength, which plays a vital role during the application of shoulder technique like Ippon Sewage (shoulder throw). Thus it may be considered as specific test item for specific physical fitness test battery for Judo players. In order to find out the comparison validity the performance of Judokas and non-Judokas were compared on specific
physical fitness battery. The results of comparison validity reveals that the performance of Judokas in specific physical fitness tests found higher than non-Judokas, except in 30 meters run test. It indicates that the speed component does not play dominant role in Judo performance. Hence we may conclude, that the component of specific fitness battery i.e. Arm strength, Grip strength, Strength endurance, Explosive leg strength and Flexibility are the primary factors contributing towards Judo performance and speed plays an additional factor contributing toward Judo performance.

The logical validity of selected test items were established on the basis of research references and direct contribution of selected physical fitness components towards Judo performance. Cut lip’s (1968), has taken the grip strength test on dynamometer to determine the grip strength of specific weight groups of wrestlers. The grip strength test measuring fore arm and wrist strength was found specific for a Judoka, while taking Kumi-Kata (taking grip on dress), before an application of standing and ground techniques. The sit and reach test may be considered specific for measuring flexibility of a Judo players. It was used by some researchers like Phipp’s (1983) used bend and reach test for the evaluation of flexibility of volleyball players. In some of the Judo situation a Judoka required greater extension of his body parts like application of leg techniques (Uchi-Mata), counter technique and ground technique like making bridge to rescue from hold.

The sit-up test was also found specific for measuring the abdominal strength endurance of Judo players. Many researchers had used this test for measuring abdominal strength of players. Wilfred’s (1993), used sit-up test to measure the abdominal strength of judokas. This ability played an important role during the application of counter
technique (Utsiero Goshi) and holding techniques (Kesa Gatame). The standing broad jump test was found specified test for measuring the explosive leg power of Judokas. Johnson’s (1978) used this test for investigating the explosive leg strength of wrestlers. This ability is prominently needed in Judo during lifting and executing the throws and also in some situations where judokas have to bear his own body weight along with his opponents, like in ‘Kata Gurma’ technique he lifted his opponent over the shoulders. Pull-up test also be shifted as measuring of arm and shoulder strength of Judo players. Carr’s (1963) used for badminton players. Goldman’s (1986) also recommended pull-ups as specific exercise to develop arm and shoulder strength for a Judo player. This ability is needed for a Judoka to pull and push his opponent before an application of standing throws, like Ippon Seio-Nage (Shoulder throw). Thirty meters dash test is also be considered as specified test for measuring explosive speed of a Judo players. Toyada et al. (1973), used twenty meters dash test for measuring explosive speed of volleyball players. Horak (1978), evaluated speed ability of Olympic men volley ball team by using 60 meters sprint test and found significantly to their performance. In each phase of Judo bout a Judoka required to perform the movements with a greater amplitude, so that he could prevent the counter attack of his opponent.

Therefore, on the basis of data obtained and analyzing the specificity for selected test items of specific physical fitness test battery for National level Judokas, was developed by the investigator which could be considered reliable, objective and valid. Norms have also been prepared for grading National level male Judokas on different test items of specific physical fitness test battery. Thus the test battery fulfils the criterion of specific authenticity.