4: METHODOLOGY AND PARTICIPANTS

A pilot study was undertaken to make any necessary changes in the assessment form, procedure and to acquaint the researcher to the process and to explore the practice of yogasanas in various centers in Pune. Approval was taken from Sancheti Institute ethical committee. Advice was taken from various yoga teachers and their permission was taken to approach their new members and previous practitioners. Yoga students/practitioners in their institutions and patients referred to Sancheti Institute Physiotherapy OPD were requested to participate in the study in various groups. Inclusion and exclusion criteria varied according to each group.

Study was divided in six groups.

- **Group A**: To study effects of yogasanas in a long-term retrospectively
- **Group B**: for evaluation of long term practice of yogasanas, Initial and follow-up assessment was done at two years of yoga practice in asymptomatic individuals
- **Group C**: To study effects of yogasanas on participants with OA knees pre and post yogasanas practice
- **Group D**: to study effects of a holistic approach for patients with OA knees pre and post yogasanas practice.
- **Group E**: to check effects short term practice of yogasanas on different race. Done in UK at Liverpool
- **Group F**: case studies of 5 various other problems involving knee joint complex apart from OA.

Ten asanas were analyzed which were found to be effective on the knee joint and practised regularly according to the teachers and practitioners. Muscle work of each asana was checked. The asanas: Tadasan,
Trikonasan, Virbhadrasan, Paschimottanasan, Baddha-konasan, Vajrasan, Ardha-Matsyendrasan, Pavan-muktasan, Dhanurasan and Shavasan. The postures were to be attained gradually and complete the asana cycle till comfort zone or as tolerated. Gradual progression was made. Props like pillows, bolsters were given as needed. Method of practice, progression and modifications for each asana is attached. (Appendix-I)

Study design varied according to the groups. Duration of the study was five years. In group A total of 165 yoga practitioners were screened with self-explanatory questionnaire for inclusion and one time assessment for long-term retrospective evaluation was done on 105 (55 male & 50 female) participants. Total 173 participants attended initial assessment in group B, C, D & E and follow-up could be attended by 145 (40 male and 105 female) after completing the set duration of yogasanas practice. For case studies, six patients undergoing or referred to physiotherapy out-patients department at Sancheti Institute were evaluated and five (2 males & 3 females) attended followed up. Overall 255 participants were assessed.

OUTCOME MEASURES

Depending on the group and condition tested various outcome measures used were:

- Hip flexors, Hamstrings, overall spine flexion as with finger-floor distance.
- Baddha-konasana posture (for complex position of hip with knee flexion)
- Functional evaluation of knee using Knee Osteoarthritis Outcome Measure (KOOS) or Functional change as felt by asymptomatic participants.
- Evaluation of pain, knee joint range, strength, joint stability. For statistical calculation this was taken as a score on Knee Society Knee Score (KSKS) American version. Objective score. Stability score was given as mild, moderate or severe as clinically it was not possible to check in mm.
Body Mass Index (BMI); Self reported effects of yoga on five point scale Ability to attain and rise from squatting position. Documentation of medications used was done. 

SAMPLING: Convenience sampling in all groups.

4.1: STATISTICAL ANALYSIS: Methods used

Statistical Analysis was done using tools in Microsoft excel. ANOVA single factor was used to determine differences in three groups of participants in long term retrospective group A. Paired t-test Two samples for means was used to compare outcome measures pre and post yogasanas practice. This was used for BMI, Hip flexor tightness, hamstrings tightness, Finger-floor distance and Baddha-konasan. Confidence interval of 95% was used, Alpha of 0.05. P value considered was less than 0.005 for statistical significance.

SPSS software package was used to analyze components of KOOS and KSKS. Wilcoxon sign ranked test was used to determine the statistical significance. Mann-Whitney U test was used to compare Objective American knee Society knee score for patients with OA knee yogasans classes and knee club members having OA knees. This is a non parametric test used for comparing two independent samples/groups from same component.

DURATION:

Initial pilot study and permissions required one month. Study was completed in five years.