

CHAPTER 5

METHODS

5. METHODS

5.1 PARTICIPANTS

5.1.1 SAMPLE SIZE

The sample size was calculated based on a previous study, wherein using Version 3.0.10 of G*Power software, alpha = 0.05, power = 0.7, effect size = 0.403, the sample size was arrived at 118 (59 yoga group, 59 Physical exercises group).

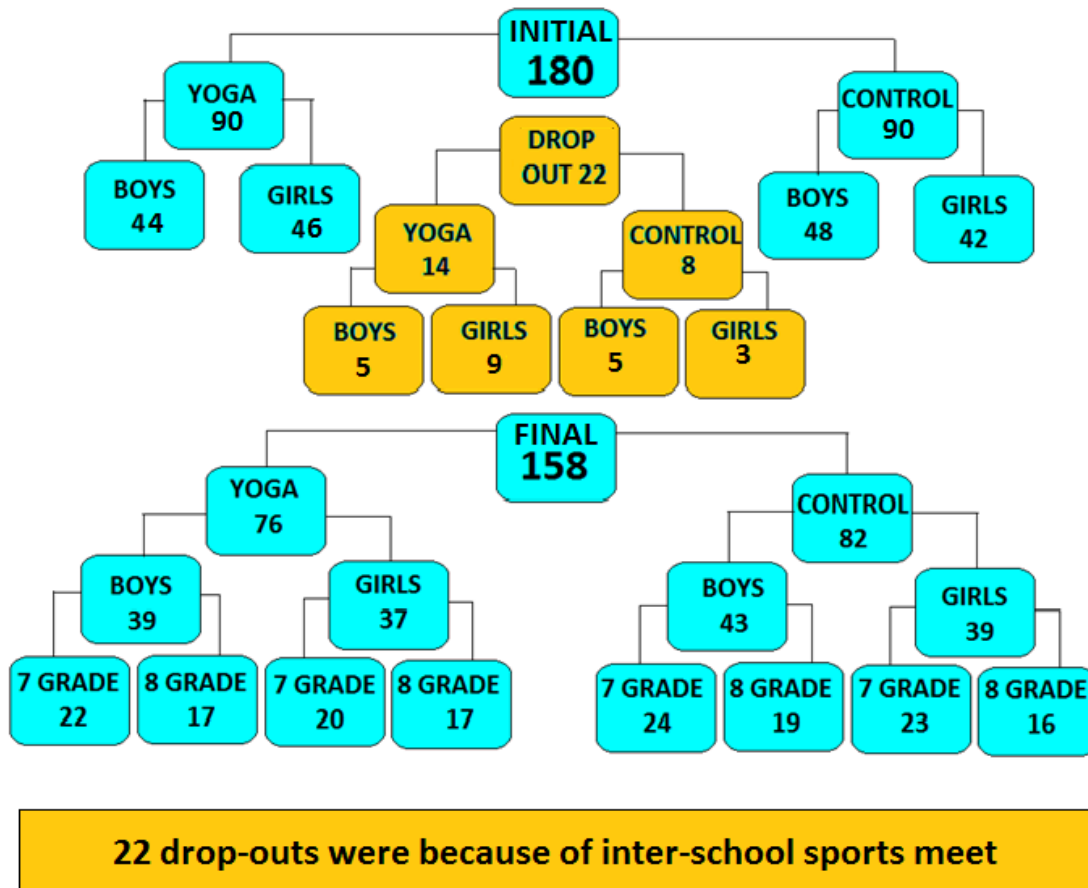
Totally 180 adolescents (90 yoga group + 90 Physical Exercise group) in 12 to 16 years of age (mean age 14.04 years +/- 1.018 years), of both genders (92 boys, 88 girls, in the grades 7th and 8th) satisfied inclusion and exclusion criteria and consented to participate in the study by being in the randomly allocated groups namely yoga and physical exercise (PE).

By the end of study period (fourth week) there was participant attrition to the extent of 22 adolescents (12.22 per cent of 180) and reason attributed by the school managements was 'Inter-school sports meet' (Table 3; Figure 2); and complete data was available for 158 adolescents (76 yoga, 82 PE; boys 82, girls 76; 89 seventh, 69 eighth grades) aged 12 years (13), 13 years (39), 14 years (36), 15 years (69), 16 years (1).

TABLE 3: DEMOGRAPHIC DETAILS

At the end of the study period	Yoga group	PE group
Total number of students (n)	76	82
Mean age (years)	14.03	14.06
Standard deviation (years)	1.006	1.035
Range (years)	12-15	12-16
Number of girls	37	39
Number of boys	39	43
Age \leq 14 years	44	44
Age $>$ 14 years	32	38
Number of 7 th -grade students	42	47
Number of 8 th -grade students	34	35

FIGURE 1: SAMPLE SUMMARY



5.1.2 SELECTION AND SOURCE OF PARTICIPANTS

The present research study was conducted in Bangalore, the capital city of Karnataka, India, where education and the language policies are mostly ‘State Controlled’. Under these State controlled policies, students in private as well as Government owned colleges and schools have core (compulsory) as well as elective (optional) subjects and languages giving ample choices (combinations of subjects/languages) to the students. Further, in the recent days, there has been increased thrust on all round personality growth of the students; extra-curricular activities are increasingly becoming trendy in almost all schools and colleges, with equal opportunities being provided to both girls and boys of all ages. This is also because of competition among schools and colleges to boost up their image and to attract good number

of students. Even the parents think it is an indicator of their high social status to send their children to good schools, where more number of extra-curricular activities (like yoga, swimming, karate, dance, painting, singing, horse riding, and other outdoor/indoor games) are provided. Obviously, this has been accompanied by unusual raise in cost of education, stiff competition among students, and resultantly, increased cost of living. Because of this kind of high cost of education and stiff competitive environment, there has been growing stress level, anxiety, aggression, and violent attitude in students of all ages, irrespective of grade and gender.

Two private owned schools in the middle-class neighborhood were chosen in South Bangalore for this present research study. Both the schools are situated in middle-class neighborhood of South Bangalore and were approximately identical in respect of the financial status of parents, standard of education and medium of instruction offered. In both the schools, English and Kannada languages were being taught as the medium of instruction. It was confirmed by the students, parents and managements of schools that this kind of yoga-related research study was never done previously in both the schools, and yoga was never a part of their school curriculum. Thus, it was generally believed by the researchers of the present study that certain levels of aggression would be present among these school students; and boys would have stronger beliefs supporting aggression/violence as demonstrated in some of the earlier researches (Sukhodolsky & Ruchkin, 2004), that was confirmed by school teachers of both the schools in their informal interaction with the researchers of the present study. Hence, out of the short listed schools, these two private schools were chosen to conduct the present study.

Having obtained permission from these two school managements to conduct the present research (on the condition of maintaining the anonymity of the school details and student

details), students, their parents, school teachers were explained the detailed protocol of the study in an introductory address. The ‘student details’ (names, gender, age, grade) of these adolescents were collected from the school records upfront.

5.1.3. INCLUSION CRITERIA

Totally 180 students (88 girls, 92 boys) satisfied inclusion and exclusion criteria and consented to participate in the present study by being in randomly allocated groups (Yoga/Physical exercises groups). The inclusion criteria were healthy adolescents of both genders and ability to read and write either English or Kannada (local/state language).

5.1.4 EXCLUSION CRITERIA

The exclusion criteria were chronic illnesses, anxiety disorders, depression, and substance abuse like nicotine, alcohol, and drugs. Besides students’ confirmation, this was again cross-checked with the school teachers and the concerned parents.

5.1.5 ETHICAL CONSIDERATIONS

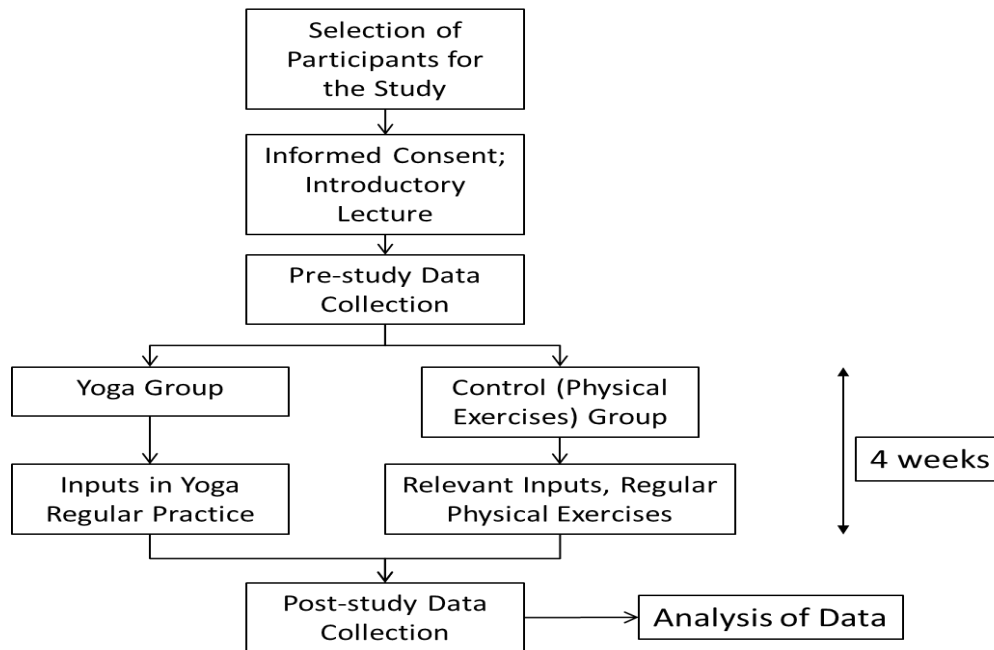
Institutional Ethical Committee of SVYASA (*Swāmi Vivekānanda Yoga Anusandhāna Samsthāna* - Parent Institution) had cleared the present project (Appendix 7). Upfront, the adolescents were exposed to an introductory lecture of 45 minutes, along with their parents and concerned school teachers. The students were given the choice of not participating in the study and of not answering the questionnaire besides giving them an option to exit from the research study at any stage without the compulsion of offering any reasons. The adolescents who took part in the current study expressed their approval by signing ‘Informed Assent’ (Appendices 5 or 6) that was provided to them in English or Kannada as per their choice. Parents also signed ‘Consent Forms’ (Appendices 3 or 4), agreeing for their children’s

participation. Both the school managements also agreed for the study. Further, to avoid any unexpected, unpleasant episodes, guidance of a psychologist was sought to monitor the administration of questionnaires / scales to the participants (during both pre and post administration), who had no roles in grouping of participants or in the conduct of sessions, and was not connected with the schools or students in any way. Further, the subjects were randomly grouped into yoga and physical exercise groups for which students also agreed freely.

5.2 DESIGN OF THE STUDY

Being a randomized control trial, the study design was comparing the pre-intervention data with that of post-intervention data, within groups and between groups, namely Yoga and physical exercise groups. For ease in the sequential execution of different aspects, the study design was conceived, which could serve the researchers of the present study by way of offering them a detailed and step by step protocol, and the school managements by providing them 'practice design' for their students, so that students are made available for the study on regular basis for the entire study period. Figure-2 shows the pictorial representation of the study design, which was provided to the school managements and teachers.

FIGURE 2: PICTORIAL REPRESENTATION OF STUDY DESIGN:



5.3 VARIABLES STUDIED

Variables measured in this study are (1) Adolescents' attitude toward violence and (2) Adolescents' beliefs about aggression and alternatives.

The overt aggression/violence scales (OAS) consider four kinds of aggression/violence namely, (1) physical aggression/violence against one-self, (2) physical aggression/violence against objects, (3) physical aggression/violence against others, and (4) verbal aggression (Yudofsky, Silver, Jackson, Endicott, & Williams, 1986). In the present study, two overt aggression/violence (against others) scales are used: (i) Attitude toward violence scale and (ii) Adolescents' beliefs about aggression and alternatives scale.

5.3.1 Scale - Attitude toward violence

This scale was formulated by Houston Community demonstration project (1993) and custom-made by Bosworth & Espelage (1995) (Dahlberg, Toal, Swahn, 2005). The scale offers six

hypothetical situations to the adolescents (Appendices 8 and 9), and the adolescents have to answer to what extent they agree under following five (Likert type) levels:

1. Strongly disagree (5)
2. Agree (4)
3. Neither (3)
4. Disagree (2)
5. Strongly Agree (1)

The scale items 5 and 2 are reverse scored. Thus, a minimum score of 6 or maximum score of 30 is possible on summing up the scores. A higher score indicates higher attitude towards violent strategies (higher support to violence) and limited use of non-violent strategies. A lower score indicates the other way. Thus targeted at adolescents/middle school children, in the grades 6 to 8, the scale measures adolescents' attitude toward violence, acceptability or otherwise of violence and also measures the extent of use of nonviolent or peaceful strategies as effective substitutes or alternatives to the violent strategies adoptable. The 'Attitude toward violence scale' has an internal consistency (reliability/validity) of .67.

5.3.2 Scale: 'Adolescents' Beliefs about Aggression and Alternative'

This scale was originally designed in 2004 by 'Multisite violence prevention project,' and adapted by Farrell, Meyer & White, 2001 (Dahlberg LL, Toal SB, Swahn M, 2005). Two subscales are built-in in this main scale: (a) Beliefs about aggression (items 3, 4, 6, 9, 10, 11, 12), (b), Use of nonviolent strategies (items 1, 2, 5, 7, 8). Thus, in all the scale offers 12 hypothetical situations to the adolescents (Appendices 10 and 11). The subjects have to answer to what extent they agree or disagree as follows:

- 1: Strongly agree (1)
- 2: Agree somewhat (2)
- 3: Disagree somewhat (3)
- 4: Disagree (4)

All items are to be reverse-scored before summing up in both the subscales. Point values are summed up and divided by the number of items in each of the two subscales. Reliability/Validity, i.e., internal consistency is .66 to .72 in both these subscales. The target group of the scale is adolescents/middle school students in the grades 6 to 8.

5.4 INTERVENTIONS

The yoga group practiced integrated yoga module (Appendix-1) for four weeks (for one hour a day, for five days a week, Monday to Friday) taught by qualified yoga professionals, who were proficient in both the languages (English and Kannada). The Integrated yoga module used in this study was designed based on the ancient Indian yoga scriptures, and same has been used in previous studies on yoga for the promotion of positive health. This module has been found to be useful for all-round personality development of the practitioners – at the corporeal level, mental level, emotional level, spiritual level and for their sociability (Deshpande, Nagendra, & Raghuram, 2008a). The *āsanas* are from different categories (supine, prone, sitting, standing, and balancing) capable of stretching different parts/muscles of the body. The coverage shown in the yoga module may seem to be highly comprehensive and extensive, given the duration of the intervention period. However, it must be mentioned here that there were variable depths of coverage. All the *āsanas* mentioned in the tables were covered, albeit in different combinations on different days. Compared to the *āsanas* and meditation, the coverage on the yogic way of life (theory session) was minimal. For instance,

meditation practice was given only for three days in those four weeks of intervention whereas the inputs on yogic-diet (yogic food habits) were imparted on only one day during the entire intervention period.

Novelty in teaching *Yogāsanas*:

In order that the learning of *yogāsanas* is made interesting, the subjects were made to know the meaning of each of the *yogāsanas* learned. On the power point presentation, each of the *yogāsanas* was displayed along with its equivalent picture. For example,

Paryāṅkāsana – Picture of *āsana* and picture of bed.

Sethubandhāsana – Picture of *āsana* and picture of a bridge.

Dhanurāsana – Picture of *āsana* and picture of a bow.

Chakrāsana – Picture of *āsana* and picture of a wheel.

Bhujāṅgāsana – Picture of *āsana* and picture of a cobra.

Shalabhāsana – Picture of *āsana* and picture of a locust.

Naukāsana – Picture of *āsana* and picture of a boat.

Uṣṭrāsana – Picture of *āsana* and picture of a camel.

Shashāṅkāsana – Picture of *āsana* and picture of a rabbit.

Padmāsana – Picture of *āsana* and picture of a lotus.

Trikonāsana – Picture of *āsana* and picture of a triangle.

Ardhakaṭīcakrāsana – Picture of *āsana* and picture of a half wheel.

Vṛkṣāsana – Picture of *āsana* and picture of a tree.

Physical exercises module (Appendix-2) was developed by professionals. The PE group practiced this module under the guidance of a trained physical exercise trainer for the same period (for four weeks, five days a week, one hour a day) simultaneously on a different floor of the same premises. Physical exercises selected in this study were aimed at moderate exercise of various parts of the body, loosening of joints, and muscles. Further, power point presentation on healthy life-style according to modern medical science, the importance of balanced diet, ill-effects of drug abuse, alcoholism, injurious effects of smoking, modern stressful life, effects of sedentary lifestyle, obesity and related ailments, remedial measures through physical exercises were also covered. Unguided relaxation was taught for five minutes every day. Participants' interaction with the teachers was encouraged in both the Yoga and PE group sessions.

5.5 DATA EXTRACTION

'Attitude toward violence scale' and 'Beliefs about aggression and alternatives scale' (in English or Kannada languages as per adolescents' choice) were administered on the first day (before start of yoga/physical exercises) and on the last day (at the end of 4 weeks) in a single sitting, in the presence of the psychologist. During the administration of scales, the participants were asked to sit silently, and it was ensured that they were free from diversions and influences of one over the other, by avoiding interaction or discussion. For better understanding, the questionnaire (both English and Kannada) were displayed by a projector (Power Point Presentation). Two supervisors fluent in English and Kannada languages were moving around and clarifying adolescents' doubts.

After the pre-data collection on the first day, 180 adolescents were randomly allocated to yoga and physical exercise groups (90+90) and the intervention of yoga/physical exercises started on the first day under the trained yoga / physical exercise teachers.

Both the pre and post intervention questionnaires administered and collected from the participants were marked suitably by the psychologist and preserved for future analysis. Access to these materials was limited only to the psychologist and the researchers of the present study.

5.6 DATA ANALYSIS

The data collected from the study was suitably coded and statistically analyzed using SPSS 21.0. It was preferred to assess normality of the data visually as well as through Kolmogorov – Smirnov (Sig). Non-Parametric Test: Wilcoxon Signed-Rank Test provided by SPSS.

The tests used were, reliability test (Cronbach's alpha), normality test (visual, parametric, and non-parametric), paired sample t-tests to find out the significance of the difference between pre and post intervention data for both the groups. Further, the analysis was also done within groups and between groups, and on variables 'sex' and 'age' to find out whether these could be predictors of adolescents' attitude towards violence, and beliefs about aggression and alternatives.