CHAPTER VI

SUMMARY AND CONCLUSIONS

The present study sought to investigate the potentialities of EMG biofeedback training as a general relaxation technique. The basic research issues addressed were whether EMG biofeedback training had an effect on the target response of frontalis muscle tension, whether the effect generalised to other physiological systems (electrodermal activity and skin temperature), whether it induced a subjective experience of reduced arousal and whether it decreased subjects' reactivity to a stressor. The issue of its clinical efficacy was examined by employing EMG biofeedback training as a therapeutic technique in the management of anxiety symptoms.

The sample for the study was selected from among those clients who were referred to the Behaviour Therapy and Biofeedback Unit, NIMHANS from the Out-Patient Centres of NIMHANS and Victoria Hospital, Bangalore. Clients were included in the sample if they had a diagnosis of anxiety neurosis, according to ICD-9 (WHO), were literate in either English, Kannada or Tamil languages and were willing to attend 20 training sessions. Those clients who had a history of a medical illness, an
additional psychiatric diagnosis or a change in the diagnosis were excluded from the sample. The data for the main study was collected from 36 clients who completed the therapy programme and 22 clients who dropped out of therapy.

Each client was taught to relax using frontal EMG biofeedback, over 20 sessions. There were pre-, mid- and post-therapy assessments to monitor the effects of the biofeedback training. A short-term follow-up assessment was conducted to assess the maintenance of improvement after the termination of the training sessions.

The data on the 36 clients who completed the therapy was analysed across the pre-, mid- and post-therapy assessments so as to evaluate the effects of EMG biofeedback training. This sample was subdivided into an 'adequate responder' and an 'inadequate responder' group on the basis of the median score on the post-therapy SRS and the groups were compared so as to identify the characteristics of clients who responded adequately to the therapy. The sample of those who completed therapy was compared to the sample who dropped out so as to identify the characteristics of a drop-out.

This sample of clients was considered homogeneous as regards treatment effects as a covariance analysis
indicated that pre-treatment differences on the assessment measures did not influence the post-therapy assessment values.

The clients demonstrated an ability to lower frontalis muscle tension levels rapidly over ten training sessions and more gradually over the next ten sessions. Besides the acquisition of feedback control, the clients manifest extra-feedback control i.e. an ability to self-regulate the response in the absence of feedback.

The training effect was specific as there was evidence of a decrease in the resting levels of frontalis muscle tension without an associated change in electrodermal activity and in skin temperature.

The specific nature of training was also evident during the post-therapy assessment of the physiological stress profile as clients manifest an ability to maintain lowered muscle tension levels without concomitant changes in electrodermal activity and temperature.

This pattern of results supports the prediction of the motor skills learning model which postulates that EMG biofeedback training facilitates muscle tension reduction of a highly specific nature.
The clinical benefits of training were seen in the reduced anxiety symptom scores. The amelioration of anxiety was attributed to the specific effects of training as there was evidence of lowered muscle tension, self-control of muscle tension, decreased state anxiety and maintenance of improvement during the short-term follow-up assessment in those clients who responded adequately to the therapy.

The effects of EMG biofeedback were postulated to have been mediated cognitively as improvement was discernible on the psychological assessment measures without significant changes in electrodermal activity and skin temperature. The data from the present study supports Holroyd et al’s (1984) model of change mechanisms in EMG biofeedback therapy. In this model, EMG biofeedback training is postulated to result in cognitive and behavioural changes which mediate the improvement in symptoms.

Those clients who are younger appear to benefit most from the therapy programme. The factors that motivate a client to complete the therapy programme are prior experiences with other forms of treatment, lower levels of state anxiety, cognitive anxiety and neuroticism.
The results of the study imply that biofeedback training can best be utilised as a precision tool. The specific nature of its training effect enhances its visibility as a therapeutic technique in disorders characterised chiefly by dysfunctions in the skeletal musculature. Further, its efficacy in alleviating symptoms in a clinical population, suggests that the veridical performance feedback provided during training can be used to combat demoralisation in psychiatric clients.

These results, though based on the data obtained by the therapist cum researcher from a single group are of value as they provide a basis for the next stage in research. Knowing that the therapy has had clinical effects, it may be appropriate to employ a dismantling strategy to investigate the different components of the treatment that have contributed to its efficacy. In this endeavour, the variable of age may need to be controlled as it has been found to be associated with a good prognosis. The attrition in the samples studied may be prevented to some extent, with an initial interview wherein the therapist allays the anxieties of the clients as well as discusses the nature of the treatment protocol with those clients with minimal exposure to prior treatment experiences.