A PILOT STUDY OF THE PHYSIOLOGICAL AND BEHAVIOURAL EFFECTS OF SNOEZELEN IN DEMENTIA

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Abstract

Recent interest in the use of Snoezelen as an intervention for agitated behaviour in dementia remains supported by limited evidence of efficacy. This pilot study aimed to develop an approach for assessing the effects of Snoezelen on agitated behaviour in patients with dementia and its comparability to an existing reference intervention. Ten subjects with dementia were randomised to receive a four week course of either Snoezelen or reminiscence therapy. Therapeutic effects were assessed using an agitated behavioural mapping instrument (ABMI), the Cohen-Mansfield Agitation Inventory (CMAI) and by heart rate recording. Differences in dementia severity between the two groups hindered direct comparison of outcomes. Both interventions were well tolerated and the majority of both Snoezelen and reminiscence sessions were rated positively. ABMI ratings suggested that Snoezelen might reduce agitated behaviour during and immediately after the session but that this effect is short-lived. CMAI scores indicated reduced agitated behaviour during the intervention period. Heart rate data showed both decreases and increases during the sessions for different subjects. With minor modifications, the measures used will be appropriate for a full-scale comparative trial. Both interventions may have helpful short-term effects and whilst for some subjects the sessions are primarily relaxing, for others, they may have a more stimulating effect.

Introduction

Snoezelen therapy is increasingly used in the management of patients suffering from dementia especially when there are associated behavioural and psychological problems. It is an intervention commonly used by occupational therapists in dementia and other fields of care. Snoezelen is a concept that originated in the Netherlands in the field of learning disabilities in the 1960‘s and 70‘s (Cleland and Clark 1966, Hulsegge and Verheul 1987). Nowadays it is used in the UK and many other parts of the world, not only in the field of learning disabilities, but also in dementia care, terminal care, child psychiatry and pain clinics.

The concepts behind Snoezelen arose out of the observation that organised activities for people with learning disabilities consisted mainly of performance orientated tasks. These activities may place excessive expectations on patients and fail to make good use of their potential to enjoy a variety of stimuli. People with severe and multiple handicaps often experience very limited psychological and sensory stimulation, and have limited opportunities for individual choice and control. Studies of sensory deprivation in the 1960’s suggested that unchanging, monotonous environments are stressful and that thinking and concentration could be negatively affected (Leiderman et al 1958, Zuckerman 1964). This provided a possible theoretical basis for the therapeutic effects of Snoezelen.

Snoezelen creates a relaxing, stimulating and failure-free environment. In Snoezelen rooms unpatterned visual, auditory, olfactory and tactile stimuli (stimuli which follow no specific pattern or form, and require no recognition or high level cognitive processing) can be offered (Baker 1998). No special tasks need to be performed and the patient is encouraged to explore the room at their own pace. The therapy being non-directive and the stimuli being

unpatterned helps to create a relaxing effect (Baker et al 1997). This explains the word Snoezelen, which freely translated is a amalgamation of the Dutch words explore and relax.

The similarities between the care for patients suffering from dementia and learning disabilities was one of the reasons for Snoezelen therapy to expand into dementia care. In particular behavioural and psychological symptoms in dementia could potentially be responsive to multi-sensory treatments. Although these symptoms are of enormous clinical importance (Rabins et al 1982, Knopman et al 1988) definitive interventions for them are not yet available (Auer et al 1996). Research in this area has been relatively sparse and mainly focused on pharmacological interventions. The few randomised controlled trials of antipsychotic drugs for behavioural and psychological symptoms in dementia indicated only moderate efficacy (Schneider 1996, Lanctot et al 1998) whilst side-effects are an important problem.

For these reasons research into the effects of non-pharmacological interventions such as Snoezelen is important, although so far there have only been four studies published which include ten or more patients (Moffat et al 1993, Holtkamp et al 1997, Baker et al 1998, Hope 1998). Positive effects included a reduction in levels of disturbed behaviour (Holtkamp et al 1997) and positive changes in the levels of enjoyment, the ability to relate to others, talk spontaneously, recall memories and attentiveness to the environment (Baker et al 1998). Moffat et al (1993) found an increase in ratings of happiness and interest and a reduction in ratings of sadness and fear.

This article describes a pilot study in which the effects of Snoezelen were compared with reminiscence therapy in a group of patients suffering from dementia with associated agitation.

No other published research has focused specifically on patients with dementia who exhibit significant agitated behaviour and assessed the impact of Snoezelen on that behaviour. Reminiscence therapy was selected as the control intervention because it is an established, generally well tolerated and non task-orientated therapy in dementia (Woods et al 1992; Robertson 1996). It was carried out on a one-to-one basis rather than group setting in order to control for the effect of staff attention. In the unit where this research was carried out reminiscence is an established activity with dementia patients of all abilities. Reminiscence has been shown to be beneficial with people suffering from severe dementia (Finnema et al 2000) and the authors felt that although reminiscence with these patients is perhaps different, to reminiscence with individuals in the earlier stages of dementia, in terms of their ability to communicate verbally, they remain able to appreciate the materials presented to them and benefit from the interaction with others.

We wanted to include an objective measure of the level of agitation / relaxation. Monitoring a physiological response such as heart-rate was felt to be a valid approach to this, which has been used successfully in a study of Snoezelen in learning disabilities (Shapiro et al 1997).

The main aim of this pilot study was to evaluate the feasibility of using a detailed approach to behavioural and physiological assessments both before during and after Snoezelen sessions for patients suffering from various forms of dementia.

Methods

Setting and subjects:

This randomised controlled pilot study was primarily based at a day hospital for psychiatry for the elderly, though one subject was recruited from an acute organic assessment ward.

Subjects were included in the study if they had a clinical diagnosis of dementia and were rated by the staff as exhibiting significant agitated behaviour. Subjects were excluded if they had a significant hearing impairment, visual acuity of less than 3/6, were non-English speaking or consumed more than 21 units of alcohol per week. Any patient who developed evidence of delirium, significant ill health or had any change in their psychotropic medication immediately before or during the trial were withdrawn. As patients were unable to give informed consent, written consent was obtained from their next of kin. The project was approved by the local Research Ethics Committee.

Procedure:

Patients were randomised (using a sealed-envelope technique) to receive either eight Snoezelen or eight reminiscence therapy sessions, which took place twice weekly and lasted up to 40 minutes. The session was terminated immediately if the patient expressed the desire to leave.

The Snoezelen therapy was given in a specially designed multi-sensory room, featuring comfortable seating and equipment designed to create a relaxing but also stimulating atmosphere. The equipment included a projector with special-effects wheels, projecting moving pictures slowly around the room, spotlights and mirror ball, fibre optic spray, music equipment, a bubble tube and an aromatherapy oil diffuser. Each patient was accompanied by one of the therapists (JR, NR, DAS) who had experience with both Snoezelen and reminiscence therapy. The therapist would facilitate rather than direct the patient to explore the environment. Reminiscence therapy also took place in a separate room, with a one to one patient/therapist ratio.

At baseline patients' dementia severity and cognitive impairment was rated using the Clinical Dementia Rating (CDR) scale (Hughes et al 1982, Berg 1988) and the Mini Mental State Examination (MMSE; Folstein et al 1975) respectively. The Cohen Mansfield Agitation Inventory (CMAI; Cohen-Mansfield 1989a), was completed at baseline, after the four weeks of therapy, and again after four weeks without intervention, both with the main carer and with the nurse-keyworker.

The Agitation Behaviour Mapping Instrument (ABMI; Cohen-Mansfield et al 1986, 1989b, 1992), was completed by one of the investigators for four three-minute periods each session: once before the session, then immediately after, 15 minutes after and 30 minutes after the session. The Interact Scale (Baker and Dowling 1995, Baker et al 1997) was completed immediately after each session by the therapist, who also made detailed notes about the session. The patients' heart rate was recorded from 10 minutes before each session, during the session and until 30 minutes after the session.

Measurements:

The MMSE is an 11 item scale which assesses cognitive function. Summing the points assigned to these items gives a maximum score of 30 (i.e. good cognitive function). A score of 23 or less is frequently used as an indication of cognitive decline sufficient for a diagnosis of dementia.

The CDR is a scale in which dementia severity is rated on a 5-point scale: none (CDR = 0), questionable (CDR = 0.5), mild (CDR = 1), moderate (CDR = 2) and severe (CDR = 3). In this study the CDR was rated according to the method described by Heyman et al (1987) and

Dooneief et al (1996) in which two further categories are allocated to reflect the later stages of dementia and a higher degree of impairment: profound (CDR = 4) and terminal (CDR = 5).

The short-form CMAI was used to measure the level of agitation over the previous two weeks using five-point Likert scales to assess the frequency of verbal, physically non-aggressive and physically aggressive agitated behaviour (the reported reliability for this scale is 0.82, Cohen-Mansfield 1991).

The ABMI is designed to measure the frequency of agitated behaviour during three-minute episodes by direct observation. It distinguishes between verbally aggressive, verbally non-aggressive, physically aggressive and physically non-aggressive behaviours. We had previously demonstrated good inter-rater reliability (greater than 0.975) for this scale with the five investigators in the present study. This scale was scored by allocating 1 point for each discrete occurrence of an agitated behaviour and a score of 10 points for a continuously agitated behaviour.

The Interact Scale was specifically designed to measure the effects of Snoezelen. The scale includes 22 items about mood, speech, relating to other people, relating to the environment, need for prompting, stimulation level, and wandering, restless and aggressive behaviour using a five-point Likert scale to reflect the behaviour in the session. The direction of change of each behaviour during the session can also be indicated.

The heart rate was measured using an unobtrusive device to record the heart rate at one minute intervals (CardioSport 2001 heart rate monitor). Patients were not required to wear

the heart rate monitor if they indicated they did not want to, and the device was removed if it appeared to give them discomfort or cause distress.

Analysis:

The data were examined using the Statistical Package for Social Sciences (SPSS) for Windows. We did not predict statistically significant differences between the interventions because of the small number of subjects. Comparisons between the two intervention groups were carried out using the Wilcoxon Mann-Whitney U test.

Results

A total of 15 patients were referred to the project and met the entry criteria. Ten of these patients were included in the analysis. Five patients dropped out of the study either before the intervention had started or in the early stages of the intervention due to physical illness (three patients), the patient moving out of the area (one patient) or because of discharge to residential care.

A total of 14 out of a possible 80 sessions were missed. The most frequent reasons being transport difficulties and patients not attending the day hospital. One patient missed two sessions because it was felt that some of the previous sessions had possibly had a negative effect. One patient missed one session because they were too agitated to participate.

Insert Table 1 here

The Snoezelen and the reminiscence groups were not significantly different in terms of gender and age (Mann-Whitney, NS). However baseline measurements revealed a marked

difference in terms of severity of dementia and degree of cognitive impairment (Table 1). The Snoezelen group scored lower on the MMSE, although due to the small numbers this did not quite reach statistical significance (Mann-Whitney, p=.053). The population from which we took our sample was heterogenous, and therefore it was very likely that two small samples taken from that population will be different, because the few individuals in each group are likely to be varied in their characteristics.

This marked difference at baseline greatly limits the validity of any comparison between the two groups on the measures taken, because any difference observed may be attributable to the basic difference in the level of cognitive functioning of the patients in each group. However, as this is not the aim of the pilot study anyway, further analysis of the data will be primarily of a descriptive nature.

Reported agitated behaviour

The Cohen Mansfield Agitation Inventory was found to be easy to use and appeared to provide adequate information for the purpose of this study. The results (Fig. 1) showed a tendency for the CMAI to be lower at the end of the four weeks therapy for both the Snoezelen group and the reminiscence group. This tendency was preserved at follow-up apart from the ratings in the Snoezelen group rated by the keyworker.

Insert Figure 1 here

Observed agitated behaviour

The ABMI was easy to use after some practice. The Snoezelen and reminiscence groups were similar in their levels of observed agitated behaviour prior to their sessions (see Fig. 2). The

results showed that there was a slight tendency for the total ABMI score to be lower just after the session as compared to before the session in the Snoezelen group, but this was not sustained 15 and 30 minutes after the sessions. In the reminiscence group there was a tendency for the total ABMI score to increase over the four time-points.

Insert Figure 2 here

Behaviour during the sessions

The Interact scale was found to be only moderately useful in determining the effects of the therapy sessions, because the measures were not focused on agitated behaviour. The rating of change of behaviour within the sessions indicated that both the Snoezelen and the reminiscence therapy had a positive effect on patients' behaviour. A negative change in any of the items only happened occasionally.

Notes made by the therapists immediately after the sessions were found to be useful in explaining change in agitated behaviour and gave information about which approaches were most helpful for each patient. Analysis of the comments revealed that, apart from two Snoezelen sessions, the effects of the therapies could be relaxing, stimulating or both.

In the two Snoezelen sessions perceived as having a possible negative effect on a patient's behaviour the patient's agitation level was high before the session had started. During the sessions her agitation increased and the therapist terminated the session. The same patient also had a number of positive sessions. On those occasions she was agitated at the start of the session, but her response to the music and becoming engaged in the equipment reduced her agitation.

Heart Rate

The heart rate monitor was well tolerated and provided reliable data in eight out of the ten patients (four from each group). One patient had a pacemaker, contraindicating the use of a heart rate monitor and one patient refused to wear the heart rate monitor after the first session.

Heart rate peaked at the start and the end of both Snoezelen and reminiscence sessions (Fig. 3). This was unlikely to be caused by effects of the therapy itself. Further analysis revealed that the direction of change of the heart rate appeared to be dependent on the behaviour and activities as commented on by the therapists just after the sessions. In many cases (in both groups) patients would engage well, becoming less agitated, resulting in a drop in heart rate. In other cases where the patient was not agitated prior to the session, it appeared that the patient benefited from the therapy, but that the overall effect was stimulating rather than relaxing, resulting in an increase in heart rate. In the only patient who had two unsuccessful sessions, the increase in agitation level was mirrored by an increase in heart rate. In the sessions that went relatively well, the heart rate remained about the same.

Insert Figure 3 here

Discussion

The main aim of the study was to assess the feasibility and usefulness of the measurement instruments used. A secondary aim was to identify whether there are any large effects of the interventions which may be relevant in refining the methodology for the definitive study.

From the analysis of the Interact Scale and the comments made by the therapists shortly after the sessions it appeared that both the Snoezelen and reminiscence sessions were generally well tolerated and had a positive therapeutic effect. This is comparable with other studies (Holtkamp et al 1997, Baker et al 1998). The Interact Scale was relatively easy to complete, but many items were less applicable to agitated behaviour. Furthermore, the Interact scale does not give summary scores and the item by item analysis increases the risk of a type 1 error.

Comments made by the therapists were useful in interpreting the changes in heart rate. An overall relaxing effect of the therapy resulted in a decrease in heart rate. An increase in heart rate however, could be caused by either the patient being positively stimulated by the session or by an increase in their agitation. These results are consistent with the findings of Shapiro et al (1997) in the context of learning disabilities.

The behaviour mapping provided a large amount of information over a relatively limited time period. The total mapping time per session was 12 minutes, which is too short to measure change in infrequent behaviours such as aggression. The behaviour mapping therefore essentially gave information about non-aggressive agitated behaviours. There are a number of possible explanations to account for the persistence of agitation following the therapy sessions. It could be that there is little or no generalisation of the therapeutic effects outside the sessions. Another important explanation is, that during the third and fourth observation the patients were either about to have lunch or awaiting transport to go home, times when there is normally an increase in agitation. In future research we will include baseline behaviour mapping before the intervention period to account for daily fluctuations of agitated behaviour.

The CMAI was found to be easy to use and to provide adequate information about long-term changes in behaviour in our patient group. There was a trend that agitation levels were lower after four weeks of intervention. That this trend never reached significant levels has a number of possible explanations. In the first place the numbers are small. It is also possible that the effects of Snoezelen do not carry over to the behaviour during the rest of the week. This would be consistent with the study by Moffat et al (1993), who in their uncontrolled study

reported no change between baseline and post-intervention measures of mood and behaviour. Baker et al. (1998) however reported a significant improvement in socially disturbed behaviour at home, for those patients who had received Snoezelen sessions, suggesting a longer-term effect.

There are some specific methodological difficulties with this type of study. In the first place the quality and quantity of attention that the patients receive during therapy can be a confounding factor. The therapists, the therapist/patient ratio and the duration of the intervention were therefore the same for both therapies. Another issue is that of blindness of the assessors. The scales in this study were completed by raters who knew which intervention the patient had received, and so were subject to observer bias. An objective measurement like heart rate monitoring was therefore important. The changes in heart rate however need to be interpreted with care, since not only does agitation have an effect on the heart rate, but so does positive stimulation, activity, physical illness and medication.

This study demonstrated that it is possible to recruit suitable subjects who will tolerate the procedures, and helped us in planning future research. Baseline behavioural mapping will be introduced and a cross-over design will be used to minimise the effects of difference in independent group variables. Furthermore the Interact Scale will be modified and tailored to our patient group and specific area of interest.

We found the effects of Snoezelen on agitated behaviour in patients suffering from dementia encouraging and are looking forward to the results of our next project. We hope to add to the limited research evidence of the effects of Snoezelen in dementia and to inform staff who use

the intervention in this field of care, many of whom are occupational therapists, of the relative benefits of Snoezelen for this patient group.

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Table 1. MMSE and CDR scores

	Snoezelen						Reminiscence					
	P1	P2	P3	P4	P5	Mean	P6	P7	P8	P9	P10	Mean
MMSE score	1	0	0	0	8	1.8	0	21	11	13	23	13.6
CDR rating	3	4	4	4	2	---	4	1	2	2	1	---

Figure 1. CMAI Total Agitation scores as rated by the carer and the keyworker

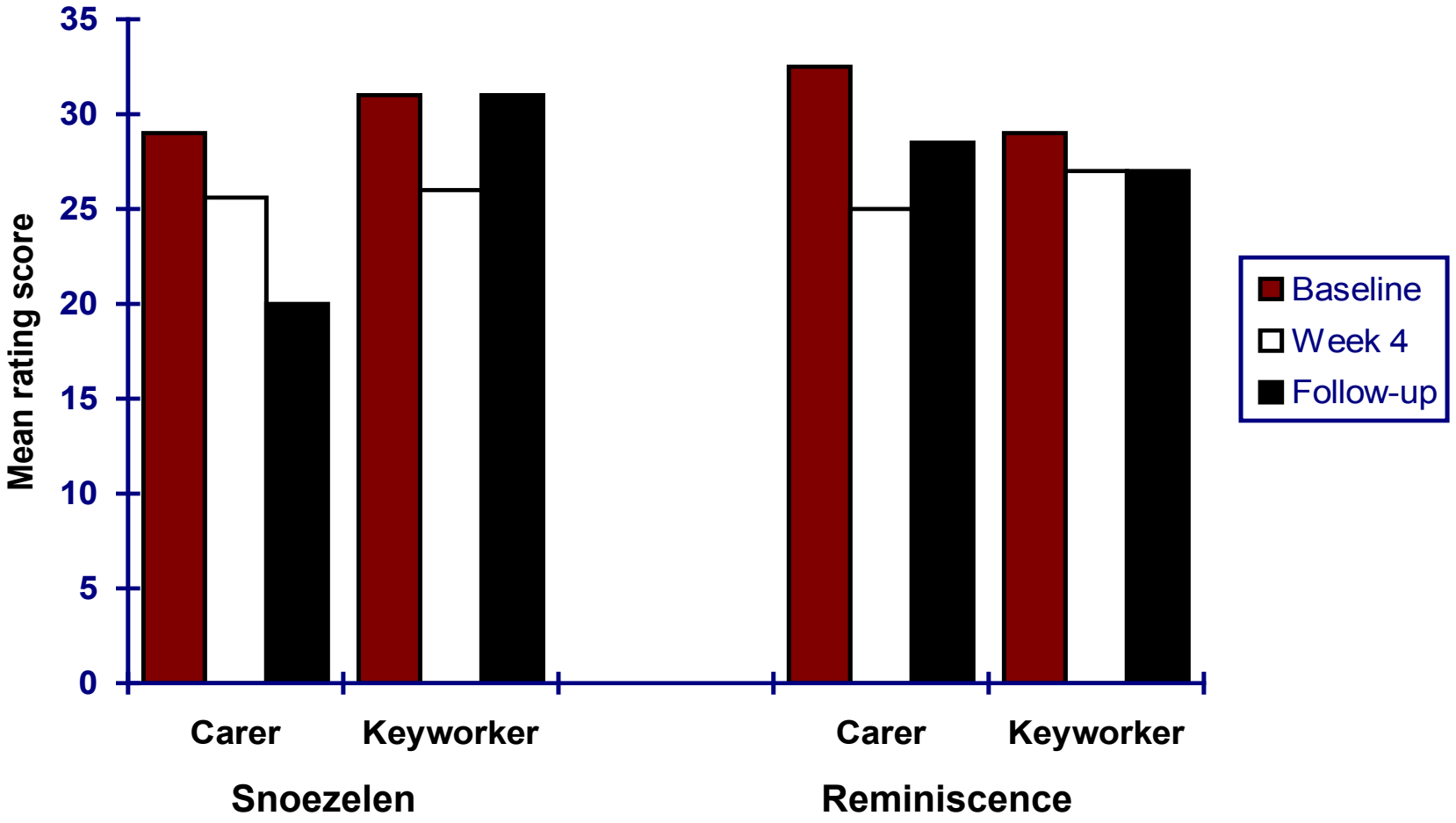

Figure 2. Total agitated behaviour from the ABMI

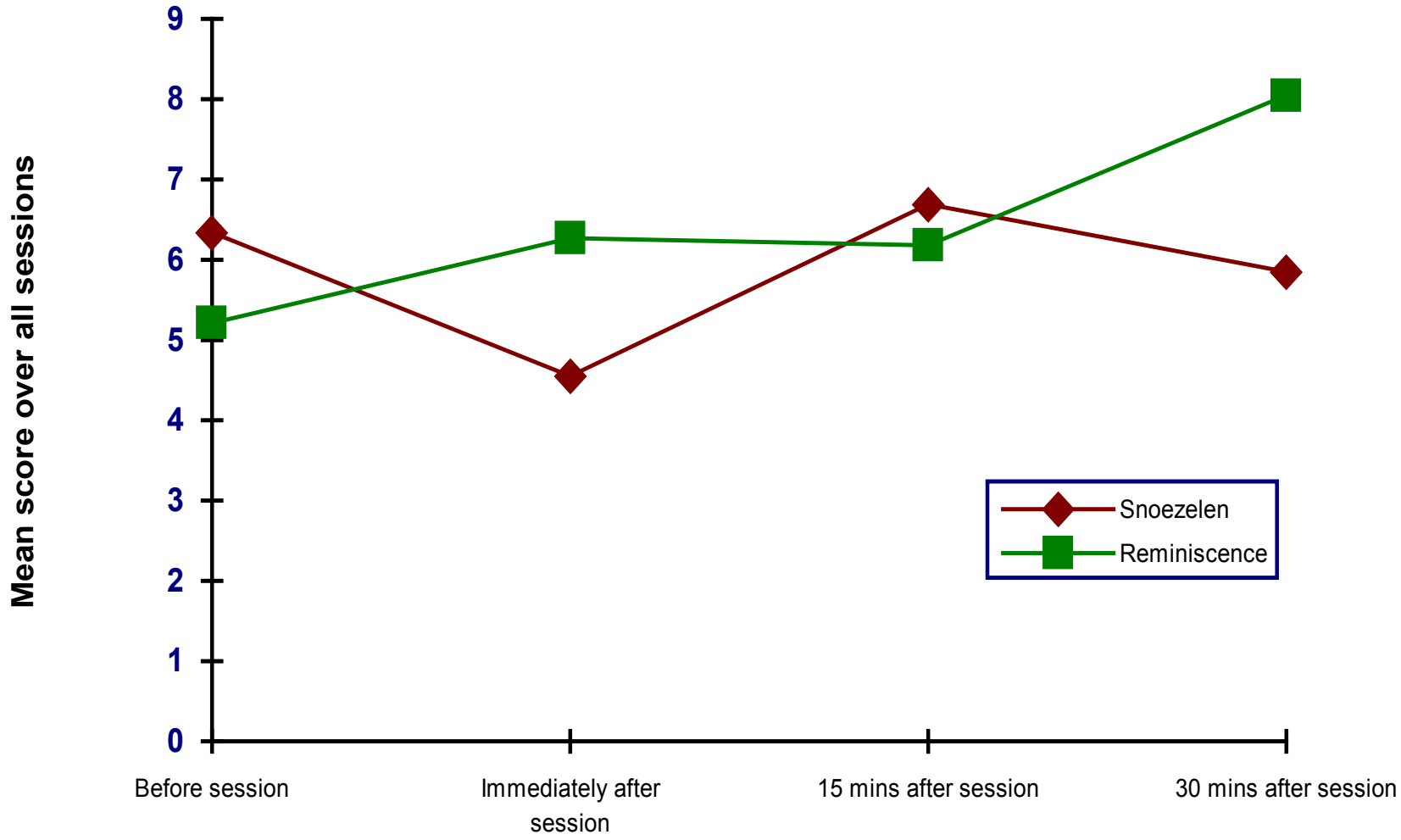

Figure 3. Mean heart rate