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Content of a warm up programme for instrumental musicians: A Delphi study

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Abstract. The role of warm up or physical exercise in the prevention of Playing Related Musculoskeletal Disorders (PRMD) among instrumental musicians has been identified over the years. However, its role could not be ascertained probably due to the non – standardised practice and pattern of the warm up exercise and physical exercise. Stretching is usually considered as a physical warm up whereas the mode and type of stretching is not usually specified. The aim of this study is to determine the content of a warm up exercise programme for instrumental musicians. This is a Delphi study and it was conducted in three phases. Experts with experience in the field of music, research and managing injuries of the performing artists, were purposively selected to be members of the panel via the Performing Arts Medicine Association (PAMA) member directory. Seven experts in the performing arts medicine participated in the study. The content of the warm up program using the Delphi study includes stretching exercises and musical warm up prior to playing while strengthening and conditioning should be done thrice a week.
Key words: *physical exercise, musculoskeletal disorders, instrumental musicians*.

Introduction

The role of warm up or physical exercise in the prevention of PRMDs among instrumental musicians has been identified over the years (1, 2). However, its role could not be ascertained probably due to the non – standardised practice and pattern of the warm up exercise and physical exercise. Stretching is usually considered as a physical warm up whereas the mode and type of stretching is not usually specified (3). A standardised exercise programme was found to reduce physical exertion while playing a musical instrument and this was found to reduce the incidence of PRMDs among an orchestra group (4). In sports, especially football, standard warm up exercise programme has been found to be beneficial in the reduction of musculoskeletal disorders (5, 6). Therefore, a well-planned and standardised warm up exercise programme could reduce the incidence of PRMDs among instrumental musicians.

The aim of this study is to determine the content of a warm up program as an injury prevention strategy to prevent PRMDs among instrumental musicians. This paper is focussed on the Delphi study which was used to design the warm up program.

Material and Method

The Delphi study which involves the use of questionnaire to collect to reach a consensus on a selected subject matter is best suited for this study. The Delphi process as discussed by Skulmoski, Hartmann, and Krahn, (7), in a three round Delphi process involves, develop the research question, design the research, research sample, develop Delphi round one questionnaire, Delphi pilot study, analyse round one result, develop round two questionnaire, release and analyse round two questionnaire, develop round three questionnaire, release and analyse round three questionnaire, verify and generalize research results. A Delphi study which was conducted in three phases was used to determine the content of the warm up program. The Delphi study was used to obtain an informed consensus from a group of experts in the performing arts medicine selected across the world from the PAMA directory. Consensus was set at 65 % of the respondents.

Participants were experts with experience in the field of music, research and managing injuries of the performing artists as recommended by Anderson and Schneider (8). They were purposively selected to be members of the panel via the PAMA member directory.

Written informed consent was obtained from each of them. The criteria for selection into the Delphi study were researchers and clinicians involved in the performing arts medicine anywhere in the world. Participants were sent an e-mail requesting their consent to participate in the Delphi study.

Twenty experts in the field of performing arts medicine were invited for this study. These included medical doctors, physiotherapists, an occupational therapist, an exercise physiologist and professional musicians; all were either involved in performing arts medicine research or treatment of the performing artists. Their background diversity allows for different views on the subject matter and this increases the quality of the study (9, 10).

Fourteen (70 %) responded, to the request, of these, six (6) gave various reasons for not being able to participate in the study. These reasons were mostly time constraints. However, eight of the experts agreed to participate in the study.

Although, eight experts agreed to participate in the Delphi study, only seven responded with their details regarding occupation, areas of specialty and years of experience.

Anonymity of the participants was ensured. The details of these experts are summarized in Table I. The mean number of years of practice experience in the performing arts medicine was 9.14 years (3 – 12 years). 85.71 %, six of the participants are involved in the treatment and research in the performing arts medicine while 14.2 %, one of the participant is a freelance musician. This includes three medical doctors, two physical therapists and one occupational therapist.

Table I. Characteristics of panel of experts

Occupation	**Years of experience**	**Speciality**	**Focus in the performing arts**
Occupational Therapist	11 years	Occupational Therapy	Musicians' injuries, upper extremity, occupational health
Medical Doctor	6 years	Sports Medicine, performing arts medicine, physical medicine and rehabilitation	Dance injury prevention
Freelance Musician	10 years	Bassoon and chamber music	Research health of wind instrumentalists
Physical Therapist	10 years	Performing arts medicine	Musculoskeletal injury of instrumentalists
Medical Doctor	12 years	Consultant rheumatologist	Musculoskeletal problems
Medical Doctor	12 years	Orthopaedic surgery	Dance (ballet)
Physical Therapist	3 years	Physical therapist/hand therapist	Stress management and health promotion

Method. A self-administered questionnaire was designed; the questionnaire was reviewed by two independent researchers for face and content validity which led to minor changes being made. The questionnaire contains both open and closed ended questionnaire, with the aim of seeking new information and establishing existing information (11-13). The questionnaire is a nine item questionnaire with the first question determining to know the years of experience and primary occupation and specialty of the participants. The remaining questions broods on the content of the warm up programme: type of exercise, duration, area of body to be "warmed up", inclusion of musical warm up in the programme and education on injury prevention strategies. The results of the systematic review informed the content of the questionnaire. Table II outlines the questions included in the questionnaire.

Table II. Content of the survey questionnaire

Item	**Description**
1	What is your occupation, area of specialty and years of experience?
2	Which of the following should be included in the warm up injury prevention program: stretching, aerobic exercise, strengthening and conditioning?
3	Should instruction on the correct technique of item 2 be included in the program?
4	Should musical warm up be included in the warm up programme?
5	What should be the duration of the warm up programme per session?
6	Describe the frequency of the warm up programme?
7	Which region of the body should the warm up programme, be focused on?
8	Which of the following education topics on injury prevention should be included in the warm up injury prevention program? Education on: breaks, body mechanics and posture, warm up, recognition of risk factors, cool down, stress reduction, strengthening, conditioning, increasing practice load gradually and physical limitation when choosing repertoires
9	What is your opinion on the mode of instruction of Item 8?

*Data Collection and Procedure***.** The survey was conducted using Survey Monkey, an online survey site that can be used to design, collect and analyse surveys.

The 9 – item questionnaire was sent as a link to the eight experts individually, anonymity was ensured.

Aggregating results is highly subjective (14) and some studies have placed consensus at 100 % (15) while others are less specific (16), however for this study, consensus was set at 65 %.

Results

First Round of Delphi study

The response rate for the first round of the Delphi study was 87.5%, seven of the eight participants responded. Consensus was reached on two items on the survey. All (100%) the participants agreed that the correct technique of the warm up program as an injury prevention strategy should be taught. Consensus was also reached on the inclusion of musical warm up as part of the warm up exercise programme. The result of the first round of the Delphi study is further illustrated in Table III.

Table III. Results of First Round of Delphi Study (n = 7)

Item	Agree	(n)	Opinion
2 Content of the warm up program			Postural awareness
Stretching	85.7%	6	
Strengthening	85.7 %	6	
Conditioning	71.4%	5	
Aerobic exercise	57.1%	4	
3 Correct technique	100 %	7	
4 Musical warm up	71.4 %	5	
5 Duration of warm up			
5-10 minutes	42.9 %	3	
10 – 15 minutes	42.9 %	3	
15 – 20 minutes	14.3 %	1	
6 Frequency of the program			
Warm up before every practice session	85.7%	6	
Conditioning (three times / week)	28.6 %	2	
Warm up (four times / week)	14.3%	1	
7 Focus of the warm up on body region			
Whole body	57.1 %	4	
Upper extremity, back and neck	42.9 %	3	
Back	28.6 %	2	
Lower extremity	14.3 %	1	
Upper extremity	14.3 %	1	
Neck	14.3 %	1	
Back	14.3 %	1	
8 Education on Injury prevention			
Breaks	85.7 %	6	
Body mechanics and posture	85.7%	6	
Warm up	85.7%	6	
Increasing practice load	71.4 %	5	
Recognition of risk factors	57.1 %	4	
Cool down	57.1 %	4	
Stress reduction	57.1 %	4	
Physical limitation	57.1 %	4	
Strengthening	57.1 %	4	
Conditioning	57.1 %	4	
Light practice when fatigue	42.9 %	3	
9 Mode of instruction of Item 8			
Classroom	100 %	7	
One on one	100 %	7	Active learning and group
Hand-outs	85.7 %	6	instruction and
Internet	42.9 %	3	reinforcement by teachers.
Television	0 %	0	