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## Original Article

### Fact-finding Survey on Stress before and after the Onset of Musician's Dystonia in Japanese Professional Performers

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Musician's dystonia, a neurological disorder, endangers the professional life of musicians. Reportedly, stress is associated with exacerbation of its symptoms. For this study, for psychological consideration of stress before and after the onset of musician's dystonia and for its development of support for it, a questionnaire survey designed to elicit responses describing event experiences, QOL, emotions, cognition, motivation, and coping behavior was administered to 17 professional performers. Responses indicate that 14 (82.4%) had experienced an "event with strong stress", 12 people (70.6%) described a musician's dystonia occurrence as an "event with strong stress", and 12 (70.6%) described musician's dystonia as "the most stressful event". Furthermore, around the onset of musician's dystonia, low "role physical/role emotional" and "mental health" were found, with high "negative perception of self" and "feelings of remorse for trauma" cognitive evaluation occurring after the onset of musician's dystonia, and reported high "state anxiety" during performances. These results suggest that musician's dystonia can be a broad traumatic stress, leading professional performers to maintain self-negative and self-responsible cognitive assessment and high anxiety during performances over a long period of time.

**Keywords**: musician's dystonia, occupational dystonia, stress, professional performers

## Introduction

Dystonia is a syndrome of dyskinesia characterized by persistent muscle tension in the central nervous system, and is classified based on clinical features such as age at onset, site of onset, course, and presence or absence of accompanying symptoms, as well as the etiology such as the neuropathology and cause<sup>23)</sup>. Here, we describe musician's dystonia (MD), in which dystonia symptoms occur in a part of the body related to the occupation of a musician.

MD is a neurological disorder that threatens the livelihood of musicians<sup>23)31)</sup>. The pathogenesis of MD is considered to originate in disorders of the motor circuit centered in the basal ganglia, which are associated with motor control, emotion, motivation, cognition, and learning new behaviors, and in the cerebellum, which is involved in motor and higher cognitive functions<sup>1)5)12)16)24)</sup>. The incidence of MD is approximately 1% in professional musicians<sup>2)36)</sup>. Since the diagnosis is based entirely on symptoms<sup>26)</sup>, it is important that a physician familiar with MD be involved<sup>27)</sup>. It is believed that the onset of the disease is influenced by prolonged repetition of the highly complex and precise

movement of playing. The risk of developing MD increases with an age at onset of 7.7 years or older, total playing time of 10,000 hours or more, and duration of practice of 10 years or more<sup>25)29)</sup>. The onset may be gradual or sudden<sup>26)</sup>. The site of onset differs according to the musical instrument played, but is considered to be an important body part for performance. Typically, it affects the fingers of keyboard and string instrument players, the embouchure (shape of the face, jaw, and oral cavity when playing a wind instrument)<sup>23)</sup> of wind instrument players, and the lower and upper limbs of drummers, but all motor functions involved in playing may be affected<sup>4)9)30)</sup>. Symptoms are characterized by movement specificity that is basically expressed only when playing a musical instrument. It is difficult to play as desired due to deterioration of physical functions important for playing, such as abnormal extension, flexion, tremor, and movement speed of the fingers; tremor, stiffness, and left-right unbalanced movement of the embouchure; poor suppleness of the upper limbs and wrist movement; and difficulty in moving the lower limbs<sup>1)22)</sup>. Treatment is centered on symptomatic therapy such as botulinum toxin

injections, medication, and surgery<sup>6)22)</sup>; however, there is still no definitive treatment.

Psychological factors such as personality, stress, and anxiety have been suggested to be involved in the exacerbation or prolongation of MD<sup>2)17)19)20)34)</sup>. In an empirical study conducted by the authors using cognitive behavior therapy for focal dystonia (CBT-FD) in patients with focal dystonia, including musicians<sup>20)</sup>, not only did anxiety, depression, and quality of life improve in patients with MD but also functional impairment due to MD symptoms in some cases. In addition, Ioannou, C.I. et al.<sup>14)</sup> suggested that anxiety is involved in MD in some groups but not in others, and future research results are awaited. Thus, while MD causes stress regarding both the physical and mental health of musicians, it has also been suggested that MD has the potential for change.

In this study, we psychologically examined stress before and after the onset of MD in professional musicians<sup>11)13)17)21)22)32)</sup>, with the aim of expanding this study to support them. To this end, based on the motor loop hypothesis centering on the basal ganglia and cerebellar hypothesis<sup>1)5)12)16)23)24)</sup>, we conducted a survey study using questionnaires regarding experiences with the event, quality of life, emotions, cognition,

motivation, and coping styles from the perspective of the cognitive model<sup>7)</sup>.

## I. Methods

### 1. Targets

Targets were referrals from co-researchers and collaborators, patients who visited the Department of Neurology at our hospital, and participants in previous studies [Approval number: A2014-095, Approval date: October 17, 2014, Funded by the National Center of Neurology and Psychiatry, "Research on Comprehensive Medical Care for Parkinson's Disease and Other Neurodegenerative Disorders" (27-4, 30-4)]: 17 Japanese professional adult performers with a diagnosis of MD, who were examined in our clinic by a co-investigator who is a neurologist and specialist in dystonia, and who agreed to participate in the study between February 2016 and March 2018 were included.

### 2. Ethical Considerations

This study was conducted with the approval of the Ethics Committee of the National Center of Neurology and Psychiatry, National Institute of Neurology and Psychiatry (approval number: A2015-097, approval date: January 22, 2016). Consent was obtained by signing a consent form after an explanation using the research

participation form.

### 3. Questionnaires and Response Methods

A questionnaire was developed to ask about basic demographics. The demographic attributes of the questionnaire included: sex, age, site of disease onset, duration of disease, and age at disease onset. Behavioral attributes included: age at beginning of performance, duration of performance, and hours of performance per day (since becoming a professional performer, immediately before onset of MD, immediately after onset of MD, and at the time of the survey). Regarding medical examinations, the number of medical institutions visited and number of months from the time symptoms were initially noticed to that of diagnosis. Other information included: treatment experience at medical and non-medical institutions, birth status, work content, economic status, onset and transition of MD symptoms, sensory tricks (i.e., symptoms relieved by applying sensory stimulation to body parts with one's own hands, etc.)<sup>15)</sup>, and performance skills made difficult by MD.

A standardized questionnaire was used for psychological evaluation. Life Events Checklist (LEC)<sup>11)</sup>, which is part of the Clinical-Administered PTSD Scale for DSM-IV (CAPS-IV) Japanese version, was used to assess whether the

patient experienced a highly stressful event<sup>11)22)</sup> and whether the incident of MD constituted a highly stressful event. The Japanese version of MOS 36-Item Short-Form Health Survey version2 (SF-36v2)<sup>10)</sup> was used to assess quality of life at the time of the survey and in the period surrounding the onset of MD; Japanese Version of the Post-traumatic Cognitions Inventory (JPTCI)<sup>22)</sup> for cognitive assessment of traumatic events and MD; new version of the State-Trait Anxiety Inventory-Form JYZ (STAI-JYZ)<sup>33)</sup> for assessment of anxiety during performance (state anxiety) and daily anxiety (trait anxiety); Japanese Version of the Beck Depression Inventory-Second Edition (BDI-II)<sup>3)</sup> to assess the severity of depression; Coping Inventory for Stressful Situations (CISS)<sup>8)</sup> to assess coping styles in stressful situations; Japanese Version of the General Causality Orientations Scale (GCOS)<sup>35)</sup> to assess the causality orientation involved in motivation.

The survey was conducted in an examination room at the National Center of Neurology and Psychiatry Hospital or at the Ichigaya Campus of Sophia University, Tokyo, Japan. The authors were present from the beginning to end of the survey to check for any unclear points or omissions. The survey took from 1 hour and 30 minutes to 3 hours per person.

#### 4. Research Methods and Data Analysis

Quantitative research methods were employed to collect data through the use of a questionnaire. Data tabulation and analysis were conducted at the National Center of Neurology and Psychiatry, National Institute of Neurology and Psychiatry, using SPSS ver. 25. A t-test was used to examine significant differences.

#### 5. Explanation of Terms: Trauma, Reaction, and Traumatic in the Broadest Sense in this Study

In this study, we used the terms trauma and traumatic in the broadest sense, as described below.

"In a broad sense, trauma refers to the phenomenon in which an experience continues to cause the same fear and discomfort for the individual as it did at the time of the experience"<sup>11)</sup>.

"In general, when we speak of traumatic reactions, we are referring only to those experiences that have a strong impact on many people and that are not seen in everyday life. In such cases, the event is considered to be the cause, not the predisposition of the individual"<sup>11)</sup>. In this study, a response is described as a "reaction" because it cannot be determined to be a traumatic reaction.

Based on the above, "traumatic" is defined as traumatic in a broad sense.

## II. Results

### 1. Attributes

Demographic and behavioral attributes (mean age at beginning of playing, mean duration of playing, mean playing time per day since becoming a professional performer, immediately before onset of MD, immediately after onset of MD, and at the time of the study, mean number of medical institutions visited, and mean number of months between initially noticing symptoms and receiving a diagnosis) are listed in Table 1. The subjects comprised 13 males and 4 females, with a mean age of  $45.4 \pm 11.8$  years, mean duration of disease of  $8.2 \pm 5.3$  years, and mean age at onset of  $37.2 \pm 9.7$  years.

### 2. Subject Profile

The subject profile is shown in Table 2, including treatment experience in hospitals and non-hospital institutions, birth status, living situation (work and financial status) at the time of the survey, details of MD symptoms, and performance skills made difficult by MD. In terms of treatment experience, all 17 subjects had experienced treatment in a hospital. Fourteen subjects had used private therapies, with an average of  $2.2 \pm 1.8$  therapies. The economic status at the time of the survey was stable (8 patients) and unstable (9 patients).

Onset was gradual in 10 patients and sudden in 7 patients.

### 3. Experiences of Events and MD Shown by the Life Event Checklist (LEC)

Table 3 lists the presence or absence and number of experiences of events described in LEC<sup>11)</sup>. LEC<sup>11)</sup> was answered by circling either one or two or more times. Fourteen respondents (with duplicate responses) had experienced a stressful event in the past, and three had not.

Next, using another LEC<sup>11)</sup>, the respondents were asked to indicate whether the MD incident corresponded to "15. Other terribly shocking events that most people do not experience," not only as a professional performer but also as a member of the general public. As a result, 12 (70.6%) of the respondents answered "yes" and 5 (29.4%) answered "no."

The 14 patients who experienced the events listed in LEC<sup>11)</sup> were asked to select one "most stressful event" including MD. Twelve patients who rated MD as a "highly stressful event" all answered that MD was the "most stressful event." Other than MD, one each selected "1. Natural disaster" and "15. Other terribly shocking events that most people do not experience."

### 4. Cognitive Evaluation of Events and MD on the Event Checklist (LEC)

(JPTCI)

The mean JPTCI scores and significant differences in events listed in LEC<sup>11)</sup> and MD are shown in Table 4. To examine whether MD morbidity is a highly stressful event, the mean JPTCI scores of the 14 subjects who had experienced the events described in LEC<sup>11)</sup> and the 12 subjects who reported that their MD illness was a highly stressful event were obtained and significant differences were examined. The results showed that the scores for negative perception of self and remorse for the trauma, which were described in LEC<sup>11)</sup>, were significantly lower than those for MD ( $P < 0.001$ ,  $P < 0.042$ ).

### 5. Quality of Life (SF-36v2) and Anxiety During Performance and Daily Life (STAI-JYZ) at the Time of the Survey and in the Period Surrounding the Onset of MD

The mean scores of SF-36v2<sup>10)</sup> at the time of the survey and in the period surrounding the onset of MD, significant differences at each time point, the mean scores of STAI-JYZ<sup>33)</sup>, and significant differences in anxiety during performance (state anxiety) and daily anxiety (trait anxiety) at the time of the survey are shown in Table 5. In SF-36v2, daily role functioning (physical), daily role functioning (mental), and mental health were significantly higher at the time of the

survey than in the period surrounding MD onset ( $P < 0.030$ ,  $P < 0.033$ ,  $P < 0.037$ ). In STAI-JYZ, anxiety during performance was significantly higher than daily anxiety ( $P < 0.000$ ).

#### 6. Depression Severity (BDI-II), Coping Style (CISS), and General Causal Orientation (GCOS)

The mean scores of BDI-II<sup>3)</sup>, CISS<sup>8)</sup>, and GCOS<sup>35)</sup> are shown in Table 6.

### III. Discussion

In this study, we conducted a questionnaire survey on experiences with the event, quality of life, emotions, cognition, motivation, and coping styles to psychologically examine stress before and after the onset of MD in professional performers.

First, 14 (82.4%) of the respondents experienced the events described in LEC<sup>11)</sup>, and approximately 60% of them experienced two or more events. The lifetime experience rate of traumatic events in the broad sense of the term is 53.5% for Japanese university students<sup>22)</sup> and 60.7% for males and 51.2% for females in other countries<sup>17)</sup>, so the experience rate of subjects in this study was high if one simply looks at the numbers. However, the results of this study cannot be considered definitive because of a variety of confounding factors, such as the occurrence of disasters and accidents at different

times, as well as cultural differences. The effects of past trauma processing status, vulnerability to trauma, and other factors on MD among the subjects of this study are points of concern<sup>7)</sup>. It is important to note that more than 70% of the subjects rated MD as the "most stressful event." Furthermore, in JPTCI, the scores for "negative perception of self" and "remorse for trauma" were significantly higher than those for the events described in LEC<sup>11)</sup>, and the scores for "negative perception of self," "remorse for trauma," and "negative perception of the world" were higher than those reported by Nagae et al. This result could be considered to support that MD can be traumatically stressful. The anxiety level was normal for daily anxiety, but high for anxiety during performance, with a score of  $62.0 \pm 8.1$ . Considering that the mean duration of illness at the time of the study was  $8.2 \pm 5.3$  years, self-negative and self-doubting cognitive evaluations and high anxiety during performance were suggested to be maintained over time. A professional performer's occupation inevitably causes physical, psychological, and social distress, not only because MD makes it difficult to perform as expected, but also because of repeated exposure to visual and auditory symptoms, and to the expectations and stares of the audience. This is an unavoidable situation for

performers in their profession. In addition, the playing of a specialized instrument that one has a lot of feelings for may have stimulated the transmission of painful thoughts and feelings, which may have influenced the persistence of the symptoms. It was also inferred that the absence of physical problems other than the symptoms made it difficult for others to understand the symptoms. However, about 30% of the participants did not consider their MD experience as a traumatic event, and the way in which they perceive their MD experience may differ depending on cognitive assessment. A study by Ehlers, A. et al.<sup>7)</sup> suggested that subsequent recovery varies depending on cognitive assessment. We need to understand that there are many performers who are under traumatic stress due to MD, and we need to provide effective support that takes into account their experiences prior to the onset of MD and takes safety into consideration. In particular, it is important to provide correct information on MD, as well as cognitive and anxiety interventions. Furthermore, the SF-36v2<sup>10)</sup> results showed that "daily role function (physical/mental)" and "mental health" linked to work roles were lower in the peri-MD onset period than in the survey period, which could be considered a state of psychological and physical

warning due to the anomaly of decreased role function and mental health. Physical and mental health care during the period surrounding the onset of MD may also be important.

On the other hand, the level of depression at the time of the survey, after the onset of MD, was mild, even though the subjects experienced MD, which is a threatening experience. While it is possible that the openness of musicians, which tends to be naturally high<sup>18)34)</sup>, may have been inhibited by MD<sup>19)</sup>, the personality tendency of musicians to experience an abundance of positive as well as negative emotions<sup>19)</sup> may be a resource that makes it difficult for depression to increase or be maintained. The coping style was at the average level, except for low interpersonal "distraction," which is a subscale of "avoidance priority"<sup>8)</sup>. The low level of "distraction" may be due to the tendency not to use interpersonal relationships for one's own distraction, or to a personality tendency of low trust in others after the onset of MD<sup>19)</sup>, suggesting a tendency to cope with worries alone without involving others and loneliness. Regarding motivation, the results were similar to those of Tanaka et al.<sup>35)</sup> in healthy university students in terms of autonomy orientation, which indicates a tendency to be intrinsically motivated, control orientation, which indicates a tendency

to be extrinsically motivated and adhere to obtaining external rewards, and loss-of-motivation orientation, which indicates a tendency to be less motivated and more depressed, and it was considered that no obvious problems had occurred at the time of the survey, after the onset of MD.

No relationship between the birth status and MD was found. The mean age at onset of performance was  $10.7 \pm 4.7$  years, exceeding the critical period for MD onset<sup>25)29)</sup>, similar to the results of Schmidt, A. et al.<sup>29)</sup>. Since the playing time was significantly shorter immediately after the onset of MD and at the time of the survey than after becoming a professional performer, it was clear that MD inhibited performance activities. The average number of medical institutions visited was three to four, and many patients visited ten or more over a number of years, indicating that it is difficult to achieve a satisfactory diagnosis after only one visit. The average length of time from the first physical symptoms to diagnosis of MD was more than 52 months. While there were performers who were diagnosed early after the onset of symptoms, there were also performers who were diagnosed with a diagnosis other than MD and took a long time to actually be diagnosed with MD, and there were performers who continued performing without being

diagnosed. This suggests that there are many performers who find it difficult to get an appropriate diagnosis, and that there are many who continue to perform for a long period of time by making their own efforts. It is important to see a specialist who is familiar with dystonia when receiving MD consultation and diagnosis<sup>26)27)</sup>. The economic situation was unstable for about half of the subjects, suggesting a severe situation in which performance activities due to MD are reduced and compensation is inadequate<sup>9)</sup>. There was concern that the unstable economic situation would create a vicious cycle in health and work, leading to amplification of the physical and mental burden.

In conclusion, this study suggests that MD can be a traumatic stress that continuously causes self-negative and self-doubting cognitive evaluations and marked anxiety during performance over a long period of time in professional musicians with MD. Prior studies showed that psychological recovery from MD is possible<sup>20)28)</sup>. The functional impairment caused by MD may be variable, because of the fact that voluntary movements involve emotion, cognition, information/processing, and memory<sup>1)5)12)16)24)</sup>, as well as based on the results of previous studies<sup>20)</sup>.

Limitations of this study include the fact that it was not a comparative study with a control group, that we did not

examine the relationships among the severity of MD, duration of illness, treatment responsiveness, and the results of each outcome, and that we were unable to match the results with qualitative and case studies on the subjective perception of distress by the performers themselves. In the future, it will be necessary to conduct survey research involving a large number of subjects, comparative research using a healthy population control group matched by occupation, qualitative research, and a comparative study of qualitative and quantitative research.

### Conclusion

The new findings of this study were as follows: (i) 14 (82.4%) of the subjects had experienced some kind of "highly stressful event" in the past, 12 (70.6%) of them rated the onset of MD as a "highly stressful event," and all of them answered that the onset of MD was the "most stressful event." The most common symptoms of MD were: (i) low "daily role functioning (physical/mental)" and "mental health" around the onset of MD, (ii) high "negative perception of self" and "remorse about the trauma" after the onset of MD, and "state anxiety" during performance. These results suggest that for professional musicians, MD can be a traumatic stress in a broad sense, with self-negative and self-doubting

cognitive evaluations and marked anxiety during performance being sustained over time, and that physical and mental health care in the period surrounding MD onset, psycho-educational interventions after onset, and cognitive and anxiety interventions are important.

It is hoped that psychological support will be combined with medical treatment, neuroscientific treatment, physical therapy, educational methods, and effective folk therapies to provide integrated support for performers suffering from MD, according to the needs of each individual performer. For this purpose, the application of psychotherapy such as supportive psychotherapy, cognitive-behavioral therapy, dialectical behavior therapy, and trauma therapy for MD should also be actively considered.

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表1 対象者属性 (n=17)

対象	人口統計学的属性					行動学的属性						治療に関するプロフィール	
						演奏に関するプロフィール							
	n	%	年齢	罹病期間(年)	発症年齢	演奏開始年齢	演奏期間(年)	1日あたりの演奏時間			受診医療機関数	症状に気づいてから診断を受けるまでの月数(中央値)	
プロフェッショナル演奏家になって以降								MD発症直前	MD発症後	調査時			
全体	17	100.0	45.4±11.8	8.2±5.3	37.2±9.7	10.7±4.7	33.7±14.7	4.7±2.3	5.2±2.7	3.7±2.4	2.1±1.8	3.8±2.8	52.5±60.7(49.0)
性別													
男性	13	76.5	44.5±12.0	7.8±5.9	36.6±9.6	12.1±3.4	31.1±13.5	4.6±2.5	5.1±2.8	4.0±2.6	2.8±1.7	4.1±3.1	63.8±65.5(49.0)
女性	4	23.5	48.3±12.3	9.3±2.9	39.0±11.2	6.3±5.9	42.0±17.1	5.0±2.1	5.3±2.1	2.6±1.4	1.9±1.2	2.8±1.0	15.8±10.1(15.5)
発症部位													
手指	11	64.7	68.5±12.0	7.9±4.8	36.2±9.6	9.4±5.2	33.0±15.5	4.8±2.5	6.0±3.0	4.0±2.5	1.8±1.5	4.1±3.3	33.2±39.0(24.0)
上肢(手指以外)	2	11.8	44.7±14.6	3.5±3.5	29.5±2.1	15.5±2.1	17.5±3.5	2.8±1.1	2.8±0.4	1.8±1.1	0.3±0.4	4.5±0.7	28.0±28.3(28.0)
アンブシュア	4	23.5	55.0±15.9	6.4±5.3	43.8±9.4	12.0±0.0	43.3±6.3	5.5±2.2	4.3±1.0	3.9±2.3	3.8±1.7	2.5±1.3	117.8±82.7(84.0)

数値はnおよび%を除き平均値と標準偏差を表すが、治療に関するプロフィール「症状に気づいてから診断を受けるまでの月数」については標準偏差が大きいため括弧内に中央値を示した。

アンブシュア：管楽器を演奏するときの顔、顎、口腔の形<sup>23)</sup>、演奏期間：調査時に専門としていた楽器を初めて演奏してから調査時までの期間、MD：musician's dystonia

Table 1. Subject Attributes (n=17)

Subject Demographic and Behavioral Attributes

Profile on Performance, Profile on Treatment

n % Age Disease Duration (years) Onset Age

Onset age of performance

Duration of performance (years)

Duration of performance per day

Since becoming a professional performer

Immediately before onset of MD

Post-onset of MD

At time of the survey

Number of medical institutions

Number of months from initially noticing symptoms to receiving a diagnosis (median)

Overall 17 100.0 45.4± 11.8

11.8 8.2± 5.3 37.2±

5.3 37.2± 9.7 10.7±  
 9.7 10.7± 4.7 33.7± 4.7  
 4.7 33.7± 14.7 4.7±  
 14.7 4.7± 2.3 5.2± 2.3  
 2.3 5.2± 2.7 3.7± 5.3  
 2.7 3.7± 2.4 2.1± 2.4  
 2.4 2.1± 1.8 3.8± 1.8  
 1.8 3.8± 2.8  
 2.8 52.5± 60.7  
 (49.0)

Sex

Male 13 76.5 44.5± 12.0  
 12.0 7.8±5.9 36.6±6.7 (49.0)  
 5.9 36.6±  
 9.6 12.1± 3.4 31.1±  
 3.4 31.1±  
 13.5 4.6± 2.5 5.1± 2.5  
 2.5 5.1± 2.8 4.0±  
 2.8 4.0± 2.6 2.8± 2.6  
 2.6 2.8± 1.7 4.1± 1.7  
 1.7 4.1± 3.1 63.8± 65.5  
 3.1 63.8± 65.5  
 (49.0)

Female 4 23.5 48.3±  
 12.3 9.3± 2.9 39.0± 2.9  
 2.9 39.0±  
 11.2 6.3± 5.9 42.0±  
 5.9 42.0± 17.1 5.0±  
 17.1 5.0± 2.1 5.3±  
 2.1 5.3± 2.1 2.6± 2.6  
 2.1 2.6± 1.4 1.9± 1.4  
 1.4 1.9± 1.2 2.8± 1.2  
 1.2 2.8± 1.0  
 1.0 15.8± 10.1  
 (15.5)

Site of onset

Fingers 11 64.7 68.5± 12.0

12.0 7.9± 4.8 36.2± 1.0

4.8 36.2±

9.6 9.4± 5.2 33.0±

5.2 33.0±

15.5 4.8± 2.5 6.0± 2.5

2.5 6.0± 3.0 4.0± 4.0± 4.0

3.0 4.0± 2.5 1.8± 2.5

2.5 1.8± 1.5 4.1±

1.5 4.1± 3.3 33.2± 39.0± 15.5 4.8± 2.5

3.3 33.2± 39.0

(24.0)

Upper limb

(other than fingers) 2 11.8 44.7±

14.6 3.5± 3.5± 3.5 29.5± 3.5

3.5 29.5± 2.1 15.5± 2.1

2.1 15.5± 2.1 17.5± 2.1

2.1 17.5± 2.1

3.5 2.8± 1.1 2.8± 1.1

1.1 2.8± 0.4 1.8± 0.4

0.4 1.8± 1.1

1.1 0.3± 0.4

0.4 4.5± 0.7 28.0± 28.3± 28.3± 28.3± 28.3

0.7 28.0± 28.3

(28.0)

Ambushure 4 23.5 55.0±

15.9 6.4± 5.3 43.8± 5.3

5.3 43.8±

9.4 12.0±

0.0 43.3±

6.3 5.5± 2.2 4.3± 2.2

2.2 4.3± 1.0 3.9± 1.0

1.0 3.9± 2.3 3.8±

2.3 3.8± 1.7 2.5± 1.0

1.7 2.5± 1.3 117.8± 82.7

1.3 117.8± 82.7

(84.0)

The values represent means and standard deviations, except for n and %. The median value is shown in parentheses for the treatment profile "Number of months from symptom recognition to diagnosis" due to the large standard deviations.

Ambushure: Shape of the face, jaw, and oral cavity when playing a wind instrument<sup>23)</sup>, Duration of playing: The period from the first playing of the instrument in which the subject specialized at the time of the survey to the time of the survey, MD: musician's dystonia

表2 対象者プロフィール (n=17)

		内訳		n	%
治療経験	利用機関と方法	病院	内服	13	76.5
			現在内服あり	4	
			トリヘキシフェニジル塩酸塩	1	
			エチゾラム	3	
			アルプラゾラム	1	
			かつて内服あり	9	
			ボツリヌス毒素注射	4	23.5
			tDCS	1	5.9
			装具作成・装着	3	17.6
			テーピング	3	17.6
			リハビリテーション	3	17.6
			鏡像運動	2	
		理学療法	1		
		CBT-FD	6	35.3	
		心理相談	催眠療法	1	5.9
			カウンセリング	1	5.9
		民間療法	鍼	11	64.7
			整体	5	29.4
			整骨院 (マッサージ)	2	11.8
			その他マッサージ	1	5.9
灸	1		5.9		
加圧トレーニング	1		5.9		
カイロプラクティック	1		5.9		
気功	1		5.9		
教育法	アレクサンダーテクニーク	4	23.5		
	フェルデンクライス	2	11.8		
	フォースタンス	1	5.9		
	ハノーファー式再教育	1	5.9		
	ディスボキネシス	1	5.9		
その他	マインドフルネス	1	5.9		
出生状況		正期産	16	94.1	
		不明	1	5.9	
生活状況	仕事内容	演奏活動のみ	10	58.8	
		演奏活動以外の仕事にも従事	7	41.2	
	経済状況	安定	8	47.1	
		不安定	9	52.9	
MD 症状	発症の仕方	緩徐	10	58.8	
		突然	7	41.2	
	症状の推移	あり	16	94.1	
		なし	1	5.9	
	痛み	あり	3	17.6	
		なし	14	82.4	
	感覚トリック	用いる	10	58.8	
用いない		7	41.2		
MDによって困難になった演奏技術	基本的な技術	6	35.3		
	高度な技術	11	64.7		

「治療経験」は重複回答あり。

MD : musician's dystonia, tDCS : transcranial direct current stimulation, CBT-FD : cognitive behavior therapy for focal dystonia, 正期産 : 妊娠 37 週 0 日から妊娠 41 週 6 日までの出産による, 感覚トリック : 身体の一部に自身の手などで感覚入力を与えることにより症状が軽快すること<sup>15)</sup>

Table 2. Profile of Subjects (n=17)

Breakdown n %

Treatment experience

Institution and method used

Hospital  
 Internal 13 76.5  
     Currently taking orally 4  
       Trihexyphenidyl hydrochloride 1  
       Etizolam 3  
       Alprazolam 1  
     Formerly taken orally 9  
 Botulinum toxin injection 4 23.5  
 tDCS 1 5.9  
 Orthotic device 3 17.6  
 Taping 3 17.6  
 Rehabilitation 3 17.6  
     Mirror image exercise 2  
     Physical therapy 1  
 CBT-FD 6 35.3  
 Psychological counseling  
     Hypnotherapy 1 5.9  
     Counseling 1 5.9  
 Folk therapy  
     Acupuncture 11 64.7  
     Osteopathy 5 29.4  
     Osteopath (massage) 2 11.8  
     Other massage 1 5.9  
     Moxibustion 1 5.9  
     KAATSU Training 1 5.9  
     Chiropractic 1 5.9  
     Qigong 1 5.9  
 Pedagogy  
     Alexander technique 4 23.5  
     Feldenkrais 2 11.8  
     Forstance 1 5.9  
     Hanoverian re-education 1 5.9  
     Dyspokinesis 1 5.9  
 Others  
     Mindfulness 1 5.9  
 Births

Full-term births	16	94.1
Unknown	1	5.9
Living situation		
Work		
Only performing	10	58.8
Engaged in work other than performing	7	41.2
Financial situation		
Stable	8	47.1
Unstable	9	52.9
MD Symptoms		
Onset		
Slow	10	58.8
Sudden	7	41.2
Symptoms		
Yes	16	94.1
None	1	5.9
Pain		
Yes	3	17.6
None	14	82.4
Sensory tricks		
Used	10	58.8
Not used	7	41.2
Difficulties due to MD		
Basic skills	6	35.3
Advanced	11	64.7

The "Experience of treatment" was answered by more than one respondent.

MD: musician's dystonia, tDCS: transcranial direct current stimulation, CBT-FD: cognitive behavior therapy for focal dystonia, full-term birth: delivery from 37 weeks 0 days to 41 weeks 6 days of gestation, Sensory tricks: symptoms are alleviated by applying sensory stimulation to a part of the body with one's own hand or other sensory input<sup>15)</sup>.

表 3 LEC による体験回数と体験者数 (n=17)

No.	出来事	体験回数		合計	%
		1回	2回以上		
1	自然災害（洪水、台風、地震、津波、噴火、土砂くずれなど）	6	2	8	47.1
2	火事や爆発事故	1	1	2	11.8
3	交通事故（自動車、船舶、電車、飛行機などによる事故）	2	2	4	23.5
4	有害物質曝露（毒物、危険な化学物質、放射能などによる被害）	0	0	0	0.0
5	その他、仕事や家庭の中、あるいは余暇活動中に起きた深刻な事故	1	1	2	11.8
6	殴る、蹴るなどのひどい暴力	0	1	1	5.9
7	刃物や銃などの凶器を用いた暴力	1	0	1	5.9
8	監禁（誘拐、人質、捕虜など）	1	0	1	5.9
9	性的暴力（カブクや暴力の脅しによる）	0	0	0	0.0
10	その他、意に反した、極めて不快な性的体験	0	0	0	0.0
11	子どものころの身体的虐待	0	1	1	5.9
12	戦争体験（戦闘、従軍、空襲など）	0	0	0	0.0
13	殺人、自殺、災害、事故などで、人が死んだりひどいケガをした現場を目撃した	2	0	2	11.8
14	家族や身近な人が、No. 1~13 の各項目のような出来事にまき込まれたことを知って、強いショックを受けた	0	2	2	11.8
15	その他、殆どの人が体験しないような、ひどくショッキングな出来事	3	0	3	17.6
16	No. 1~15 のいずれの出来事も体験なし			3	17.6

LEC：出来事チェックリスト（Life Events Check List）<sup>11)</sup>

（東京都精神医学総合研究所作成：心的トラウマの理解とケア第2版、じほう、東京、p.314、2006を一部改変）

Table 3. Number of experiences by LEC and number of patients (n=17)

No. Event

Number of experiences Total %

Once, two, or more times

1 Natural disaster (flood, typhoon, earthquake, tsunami, eruption, landslide, etc.) 6

2 8 47.1

2 Fire or explosion 1 1 2 11.8

3 Traffic accidents (accidents involving cars, ships, trains, airplanes, etc.) 2 2 4 23.5

4 Exposure to hazardous substances (e.g., toxic substances, hazardous chemicals, radioactivity) 0 0 0 0 0.0

5 Other serious accidents at work, at home, or during leisure time activities 1 1 2 11.8

6 Severe violence such as hitting or kicking 0 1 1 5.9

7 Violence using a weapon such as a blade or gun 1 0 1 5.9

8 Confinement (kidnapping, hostage, captivity, etc.) 1 0 1 5.9

9 Sexual violence (by force or threat of violence)

10 Other unwanted and extremely unpleasant sexual experiences 0 0 0 0 0.0

11 Physical abuse as a child 0 1 1 5.9

12 War experience (combat, military service, air raid, etc.) 0 0 0 0 0.0

13 Witnessed a murder, suicide, disaster, accident, etc., in which a person died or was badly injured 2 0 2 11.8

14 Shocked to know that a family member or someone close was involved in an event like No. 1-13 0 2 2 11.8

15 Other severely shocking events that most people do not experience 3 0 3 17.6

16 None of the events from No. 1 to 15 3 17.6

LEC: Life Events Checklist<sup>11)</sup>

(Prepared by Tokyo Metropolitan Institute of Psychiatry: Understanding and Care of Psychological Trauma, 2nd ed. Jiho, Tokyo, p.314, 2006, partially modified)

**表4 これまでに体験したトラウマティックな出来事およびMDに対するJPTCI得点と有意差**

内容	n	%	平均値と標準偏差	t値	P値
自己に関する否定的な認知	14	82.4	61.6±22.7	-4.556	0.001**
自己に関する否定的な認知 (MD)	12	70.6	76.8±23.0		
トラウマに関する自責の念	14	82.4	12.5±8.5	-2.364	0.042*
トラウマに関する自責の念 (MD)	12	70.6	19.8±4.9		
世界に関する否定的な認知	14	82.4	26.6±8.0	-1.625	0.139
世界に関する否定的な認知 (MD)	12	70.6	29.0±7.2		

\* $P < 0.05$ , \*\* $P < 0.001$

対象者 17 名のうち、過去にトラウマティックな出来事を体験したことのある者は 14 名、体験なしは 3 名であった、14 名のうち体験した出来事のなかで MD が最もトラウマティックな出来事であると回答した者は 12 名であった。

MD : musician's dystonia, JPTCI : 日本版外傷後認知尺度 (Japanese Version of the Post-traumatic Cognitions Inventory)<sup>22)</sup>

Table 4. JPTCI scores and significant differences in traumatic events and MDs experienced so far

Content n % mean and standard deviation t value P-value

Negative cognitions about self 14 82.4 61.6±22.7 -4.556 0.001\*\*

Negative cognitions about self (MD) 12 70.6 76.8±23.0

Self-blame related to trauma 14 82.4 12.5±8.5 -2.364 0.042\*.

Self-blame regarding trauma (MD) 12 70.6 19.8±4.9

Negative perception about the world 14 82.4 26.6±8.0 -1.625 0.139

Negative perception about the world (MD) 12 70.6 29.0±7.2

\* $P < 0.05$ , \*\* $P < 0.001$

Of the 17 subjects, 14 had experienced a traumatic event in the past and 3 had not. Twelve of the 14 subjects indicated that MD was the most traumatic event among those they had experienced.

MD: musician's dystonia, JPTCI: Japanese Version of the Posttraumatic Cognition Inventory<sup>22)</sup>

表 5 調査時と MD 発症周辺期の SF-36v2 および演奏中と  
常日頃の新版 STAI 各得点と有意差 (n=17)

尺度	内容	平均値と標準偏差	t 値	P 値
SF-36v2	身体機能 I	90.2±9.4		
	身体機能 II	90.9±10.0	3.160	0.756
	日常役割機能 (身体) I	43.4±29.6		
	日常役割機能 (身体) II	73.5±21.4	3.494	0.003**
	日常役割機能 (精神) I	50.5±36.6		
	日常役割機能 (精神) II	72.1±28.7	2.328	0.033*
	社会生活機能 I	70.6±28.6		
	社会生活機能 II	86.0±17.0	2.047	0.057
	心の健康 I	50.9±22.4		
	心の健康 II	62.4±23.7	2.271	0.037*
	体の痛み I	66.2±28.6		
	体の痛み II	68.5±29.0	0.443	0.664
	活力 I	44.6±23.8		
	活力 II	52.2±20.4	1.102	0.287
全体的健康感 I	50.2±18.2			
全体的健康感 II	54.6±13.7	5.210	0.280	
STAI-JYZ	状態不安 (演奏中の不安)	62.0±8.1	5.207	0.000***
	特性不安 (常日頃の不安)	48.8±12.2		

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$

MD: musician's dystonia, SF-36v2: SF-36v2 日本語版 (MOS 36-Item Short-Form Health Survey version2)<sup>10)</sup>, SF-36v2 の I は MD 発症周辺期を表し II は調査時を表す, STAI-JYZ: 新版 STAI (State-Trait Anxiety Inventory-Form JYZ)<sup>33)</sup>

Table 5. SF-36v2 at the time of the survey, in the period surrounding the onset of MD, and during performance, and significant differences (n=17) among scores using each of the new versions of STAI at the time of the survey, in the period surrounding the onset of MD, and during performance.

Scale description mean and standard deviation t-value P-value

SF-36v2

Physical function I 90.2±9.4 3.160 0.756

Physical function II 90.9±10.0

Daily Role Function (Physical) I 43.4±29.6 3.494 0.003\*\*

Daily Role Function (Physical) II 73.5±21.4

Daily role function (Mental) I 50.5±36.6 2.328 0.033\*

Daily role function (Mental) II 72.1±28.7

Social life function I 70.6±28.6 2.047 0.057  
 Social life function II 86.0±17.0  
 Mental health I 50.9±22.4 2.271 0.037\*  
 Mental health II 62.4±23.7  
 Physical pain I 66.2±28.6 0.443 0.664  
 Physical pain II 68.5±29.0  
 Vitality I 44.6±23.8 1.102 0.287  
 Vitality II 52.2±20.4  
 Overall sense of health I 50.2±18.2 5.210 0.280  
 Overall sense of health II 54.6±13.7

STAI-JYZ

State anxiety (anxiety during performance) 62.0±8.1 5.207 0.000\*\*\*.  
 Characteristic anxiety (anxiety during regular performance) 48.8±12.2

P<0.05, \*\*P<0.01, \*\*\*P<0.001

MD: musician's dystonia, SF-36v2: SF-36v2 Japanese version (MOS 36-Item Short-Form Health SF-36v2: SF-36v2 Japanese version (MOS 36-Item Short-Form Health Survey version2)<sup>10)</sup>, SF-36v2 I represents the period surrounding the onset of MD and II represents the time of the survey, STAI-JYZ: new version of STAI (State-Trait Anxiety Inventory -Form JYZ)<sup>33)</sup>

表 6 BDI-II, CISS, GCOS の各得点 (n=17)

	内容	平均値と標準偏差
BDI-II	抑うつ重症度	14.3±9.6
CISS	課題優先	50.2±10.7
	情動優先	52.9±10.2
	回避優先	52.4±9.0
	気分転換	51.4±9.2
	気晴らし	48.6±8.3
GCOS	自律指向性	33.2±6.6
	コントロール指向性	27.1±3.7
	動機づけ喪失指向性	25.2±4.0

BDI-II：日本版ベック抑うつ質問票 (Beck Depression Inventory-Second Edition)<sup>3)</sup>, CISS：ストレス状況対処行動尺度 (Coping Inventory for Stressful Situations)<sup>8)</sup>, GCOS：一般的因果律志向性尺度 (Japanese Version of the General Causality Orientations Scale)<sup>35)</sup>

Table 6. BDI-II, CISS, and GCOS scores (n=17)

Content mean and standard deviation

BDI-II Depression severity 14.3±9.6

CISS

Task priority 50.2±10.7

Emotion priority 52.9±10.2

Avoidance priority 52.4±9.0

Mood swings 51.4±9.2

Distraction 48.6±8.3

GCOS Autonomy-oriented 33.2±6.6

Control orientation 27.1±3.7

Motivation loss orientation 25.2±4.0

BDI-II: Beck Depression Inventory-Second Edition<sup>3)</sup>, CISS: Coping Inventory for Stressful Situations<sup>8)</sup>, GCOS: Japanese Version of the General Causality Orientations Scale<sup>35)</sup>