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ORIGINAL ARTICLE

Let's dance – feel better! Mood changes following dancing in different situations

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Abstract

In the present study, we examined mood changes following dancing. Previous works suggested that contextual factors may influence affective states; it has been shown that changes in mood following competition differ from those following recreational exercise. The study has been conducted in Warsaw, Poland. Mood was assessed before and after dance activity in three groups of ballroom dancers: recreational (n = 32) and competitive (n = 38) dancers doing ordinary training and competitive dancers taking part in a dance competition (n = 35). We observed a moderately positive change in recreational dancers doing ordinary training; they reported higher energetic arousal (EA) and hedonic tone (HT) and lower tense arousal (TA) after dance activity. In comparison dancers taking part in a competition were higher on TA before dancing and felt less pleasure after dancing than recreational and competitive dancers doing ordinary training; HT, TA and EA moderately decreased during competition. In general, the current study suggests that dance can elicit changes in mood; however, situational context has to be taken into consideration when explaining the influence of dance on mood.

Keywords: *Dance, competition, mood, energetic arousal, tense arousal, hedonic tone*

Introduction

Mood is regarded as one of the most significant psychological functions. Because individuals constantly experience a mood state, researchers believe mood is a good indicator, or barometer, of the body's most basic functions at any given moment (e.g. Thayer, 1996). Mood is considered a basic facet of psychological well-being (Ryff, 1989), and predictors of mood are therefore of great interest to researchers, clinicians and the general public. Physical activity has been found to be the most effective mood-enhancing behaviour used in self-regulation of mood (Thayer, Newman & McClain, 1994). Thayer (1996) showed that even a short, brisk walk can increase energy levels and general optimism and reduce tension, it was suggested that these effects might also apply to other kinds of moderate exercise. Listening to music was found to be the second most effective mood-enhancing factor (Thaye, Newman, & McClain, 1994). Although dance is an activity which combines exercise and music, only a few studies have explored its role in affective regulation. These studies have typically found that dance therapy and ballroom dancing have a positive impact on the well-being of people with social, physical or psychological impairments (Kiepe, Stöckigt, & Keil, 2012).

To date, there has been little research on mood changes after dancing. Lane, Hewston, Redding, and Whyte (2003) examined mood states (feelings of anger, confusion, depression, fatigue, tension and vigour) in full-time dancers before and after two different dance classes: (1) Jose Limon style (characterised by light flowing movement) and (2) Martha Graham style (characterised by bounding movements). Participants reported a positive mood profile before and after both dance classes; vigour increased after the Limon class but was unchanged after the Graham class.

We were interested in determining whether dance always has a positive impact on mood. Some research has suggested that contextual factors may influence affective states; it has been shown that changes in mood following competition differ from those following recreational exercise (Abele & Brehm, 1993).

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A review of the literature concluded that the mood benefits associated with exercise are higher in a relative absence of competition (Berger & Motl, 2000). Competition may be detrimental to mood for many reasons, including worry about negative outcomes or how others might judge one's performance (Berger & Motl, 2000).

The present study assessed mood in three groups of ballroom dancers before and after dance activity. More specifically, we investigated mood changes in samples of recreational dancers and competitive dancers doing ordinary training and competitive dancers taking part in a dance competition. We drew on the three-factor model of mood in designing the study and interpreting our findings because it seemed more relevant to understanding core affective experience than alternative models (Schimmack & Grob, 2000). The model proposed by Matthews, Jones, and Chamberlain (1990) distinguishes three dimensions: tense arousal (TA; tension and nervousness are contrasted with relaxation and calmness), energetic arousal (EA; vigour and energy vs. fatigue and tiredness) and hedonic tone (HT; pleasantness vs. unpleasantness). On the basis of previous findings we predicted that competition would be associated with generally worse mood (lower EA and HT; higher TA) than other situations. We also hypothesised that mood changes would vary between groups; specifically, we predicted that recreational dance would have the greatest beneficial effect on mood, as it is similar to moderate exercise and meets the criteria of "relative absence of competition". If it is assumed that a competitive situation is generally stressful and physically exhausting, one would predict that competitors will feel less energetic and less tense and will experience an increase in pleasure following competition. This pattern of changes was found in the stressful conditions associated with academic examination, which may be similar in some respects to other forms of competition (Zajenkowski, Goryńska, & Winiewski, 2012).

Method

All procedures used in the study met the ethical standards of the Faculty of Psychology at University of Warsaw. All participants were informed about the procedure prior to testing and gave their oral consent to participate in the study. Participation was voluntary and participants were allowed to reject or withdraw at any point.

Questionnaires

Mood was assessed with the Polish adaptation of the UWIST Mood Adjective Check List (UMACL) developed by Matthews et al. (1990) provided by Goryńska (2005). The scale consists of 29 items scored using a 4-point Likert scale; the scale is divided into three subscales: EA (poles: "energetic" and "tired"; 10 items); TA ("nervous" to "relaxed"; 9 items) and HT ("pleasant" to "unpleasant"; 10 items). Higher scores indicate greater levels in each mood domain. Internal consistency for all the subscales was high, Cronbach's alpha ranged from 0.71 to 0.90.

Additional questions asked about sex, age and training intensity in hours per week and whether the respondent had participated in a dance competition or had plans to do so. Respondents who answered "yes" to this last question were assigned to the 'competitive dancer' group; respondents who answered "no" were assigned to the 'recreational dancer' group.

Participants and procedure

The participants were ballroom dancers assigned to one of three groups based on their commitment to dance and the test situation: recreational dancers doing ordinary training, competitive dancers doing ordinary training" and competitive dancers taking part in a dance competition (see Table I for demographics). Participants danced in male–female pairs. In all groups similar music accompanied dancing related to standard and Latin dances. The three groups differed in dancing intensity ($F_{(2,102)}$ = 44.81, p < 0.001): recreational dancers were spending fewer hours per week dancing (M = 1.67, SD = 1.55) than competitive dancers doing ordinary training (M = 15.50, SD = 6.20) and competitive dancers taking part in a dance competition (M = 13.41, SD = 7.92); the two groups of competitive dancers did not differ in training intensity. The three groups did not differ in terms of sex ($\chi^2_{(2)}$ = 0.46; p = 0.79), but the recreational dancers were older ($F_{(2,102)}$ = 74.88, p < 0.001; M = 27.97, SD = 3.39) than the competitive dancers doing training (M = 20.61, SD = 2.40) or taking part in competition (M = 20.26, SD = 2.92); there was no difference in age between the two groups of competitive dancers. Participants completed the UMACL before and after dance training or dance competition. In all groups, the gap between the two measurements was about 1 hour 30 minutes.

Table I. Demographic variables in the three studied groups

	Male:female	Age	
Group		Mean (SD)	Median
Recreational dancers	17:15	28.00 (3.40)	28
Contestants	23:15	20.61 (2.40)	20
Contestants in competition	19:16	20.26 (2.92)	19

The competitive dancers taking part in a competition were also asked for the rank they obtained in the competition; this was converted into a proportion to standardise for different range of ranks possible to obtain by contestants starting in different competitions (e.g. second out of six competitors would be expressed as 0.33). Next, we tested whether competitive dancers who ranked in the upper 50% during competition differed from those ranked in the lower 50% in terms of the mood level, but found no significant differences.

Two-way analysis of variance (ANOVA) with repeated measures was used to test for group differences in mood alteration. Group assignment was the between-subjects factor (three levels: recreational dancers, competitive dancers and competitive dancers during competition), and activity (two levels: before dancing and after dancing) was a within-subjects factor. The dependent variables were the three mood dimensions (HT, EA and TA). For significant interactions, simple effects were analysed with paired post-hoc tests with Bonferroni correction. In the results, we report means and standard errors, as well as the norms of the Polish adaptation, which assessed mood in a neutral situation (Goryńska, 2005).

Results

First, we correlated all mood dimensions (n = 105). The analysis revealed that HT before dancing was negatively correlated with TA before (r = –.46; $p < 0.001$) and TA after (r = –.32; $p < 0.001$) activity and positively with EA before (r = .60; $p < 0.001$) and EA after (r = .31; $p < 0.001$) dancing. TA before dancing was negatively associated with the first (r = –.31; $p < 0.001$) and second measurement of EA (r = –.26; $p < 0.001$). HT after dancing correlated negatively with the first (r = –.29; $p < 0.001$) and second (r = –.68; $p < 0.001$) measurements on TA, positively with EA after activity (r = .55; $p < 0.001$) and was not related to EA before activity (r = .06; $p > 0.05$). TA after dancing was not significantly related to first EA (r = –.14; $p > 0.05$) but was negatively associated with second EA (r = –.44; $p < 0.05$). Finally, two measurements within each mood dimensions were positively correlated: HT (r = .25; $p < 0.05$), TA (r = .40; $p < 0.001$), and EA (r = .28; $p < 0.05$). The results are consistent with previous findings (Matthews et al., 1990).

Changes in HT are shown in Figure 1, ANOVA revealed no main effects of activity ($F_{(1,102)}$ = 1.98, p = 0.163, η^2_p= 0.019), but there were significant effects of group ($F_{(2,102)}$ = 3.96, $p < 0.05$, η^2_p= 0.072) and group by activity interaction ($F_{(2,102)}$ = 17.44, $p < 0.001$, η^2_p= 0.255). An analysis of simple effects showed that recreational dancers (M = 32.84, SE = 0.74, sten = 6), competitors during training (M = 32.71, SE = 0.68, sten = 6) and competitors taking part in a competition (M = 33.97, SE = 0.71, sten = 6) did not differ in HT before dancing, but after dancing, competitors who had taken part in competition had lower HT than the other two groups ($p < 0.01$). Furthermore, HT increased in

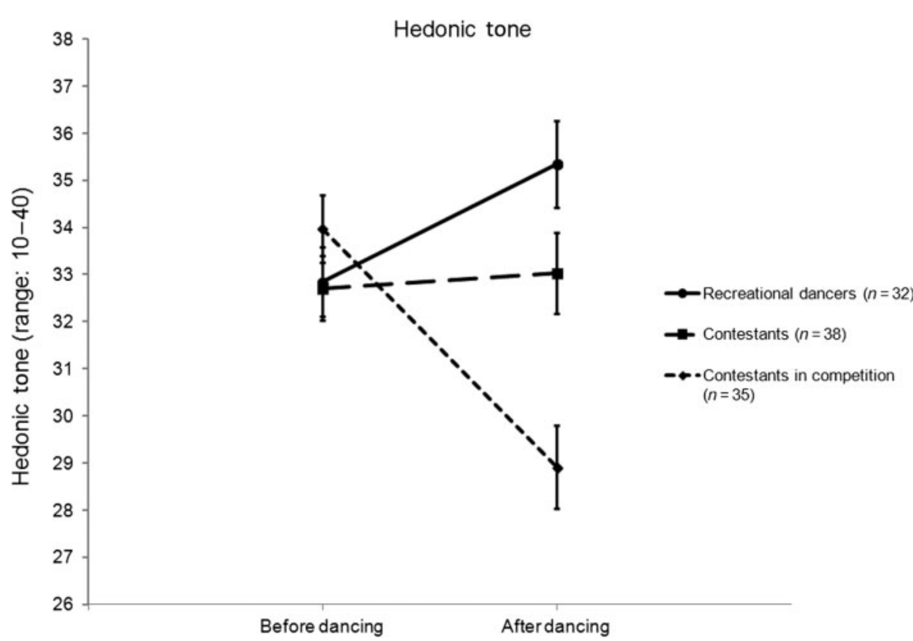

Figure 1. HT before and after dancing in recreational dancers, competitive dancers doing ordinary training and competitive dancers taking part in a dance competition.

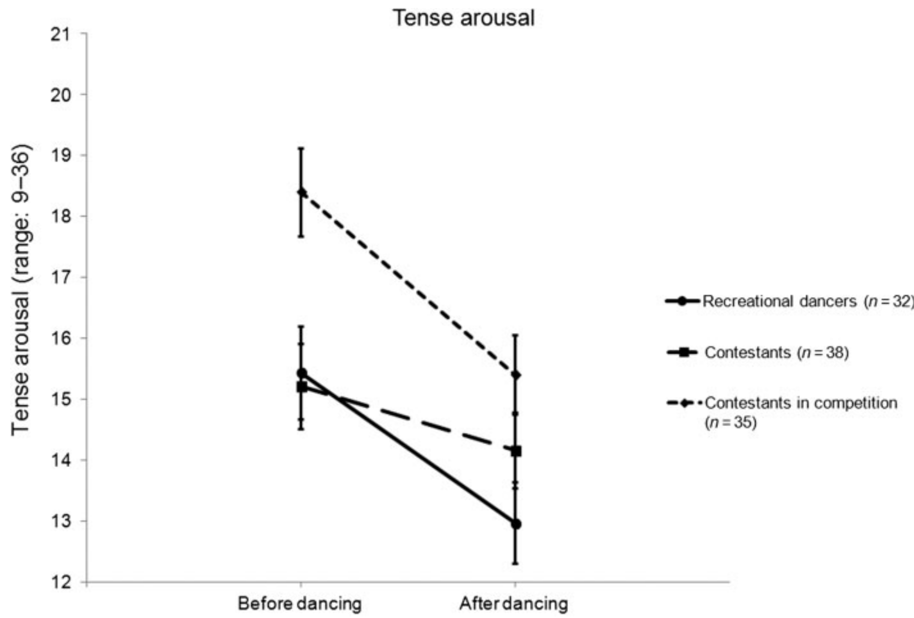

Figure 2. A before and after dancing in recreational dancers, competitive dancers doing ordinary training and competitive dancers taking part in a dance competition.

recreational dancers after dancing (M = 35.34, SE = 0.92; $p < 0.05$, sten = 7), unchanged in competitors who had done ordinary training (M = 33.03, SE = 0.85; p = 0.721, sten = 6) and decreased in competitors who had taken part in competition (M = 28.91, SE = 0.88, sten = 4; $p < 0.001$).

Changes in TA are shown in Figure 2, ANOVA revealed significant effects of activity ($F_{(1,102)}$ = 23.38, $p < 0.001$, η_p^2 = 0.186) and group ($F_{(2,102)}$ = 6.14, $p < 0.01$, η_p^2 = 0.108), whereas a group by activity interaction was statistically non-significant ($F_{(2,102)}$ = 1.76, = 0.177, η_p^2 = 0.033). Pairwise comparisons revealed that TA was higher in competing competitors (M = 16.87, SE = 0.57, sten = 6) than training competitors (M = 14.68, SE = 0.55; $p < 0.05$, sten = 5) and recreational dancers (M = 14.20, SE = 0.60; $p < 0.01$, sten = 4). Moreover, in all participants TA before dancing (M = 16.34, SE = 0.42, sten = 5) was higher than after dancing (M = 14.17, SE = 0.37, sten = 4).

Changes in EA are shown in Figure 3, ANOVA revealed no main effects of activity ($F_{(1,102)}$ = 0.05,

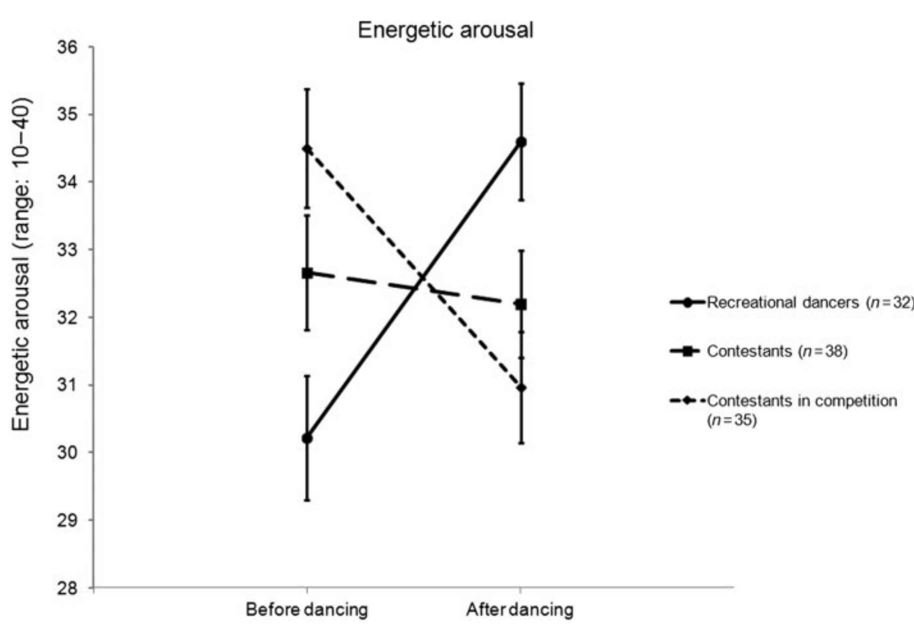

Figure 3. EA before and after dancing in recreational dancers, competitive dancers doing ordinary training and competitive dancers taking part in a dance competition.

$p = 0.823$, $\eta_p^2 = 0.000$) or group ($F_{(2,102)} = 0.07$, $p = 0.932$, $\eta_p^2 = 0.001$), although there was a significant group by activity interaction ($F_{(2,102)} = 17.86$, $p < 0.001$, $\eta_p^2 = 0.259$). An analysis of simple effects showed that before dancing, competitive dancers preparing to compete had higher EA ($M = 34.51$, SE = 0.88, sten = 7) than recreational dancers ($M = 30.22$, SE = 0.92; $p < 0.01$, sten = 5), whilst competitors preparing to train did not differ in EA ($M = 32.66$, SE = 0.85, sten = 6) from the other groups. After dancing recreational dancers exhibited higher EA ($M = 34.59$, SE = 0.86, sten = 7) compared to competitors who had competed ($M = 30.97$, SE = 0.82, sten = 5; $p < 0.01$), whereas competitors who had trained did not differ in EA from the others ($M = 32.18$, SE = 0.79, sten = 5). EA increased after dancing for recreational dancers ($p < 0.001$) unchanged in competitors who had trained ($p = 0.593$), and decreased in competitors who had competed ($p < 0.001$).

In summary, dancing had a similar effect on the levels of HT and EA, which differed depending on the group; their levels increased after dancing in recreational dancers, decreased after dancing in competitors who had competed and remained unchanged in competitors who had trained. TA, on the other hand, did not depend on the group; in all dancers, TA decreased after dancing, but in competitors taking part in a competition, its level was constantly higher, compared to the two other groups. There were no group differences in HT before dancing, but before dancing, overall arousal (TA and EA) was highest in competitors preparing to compete and lowest in recreational dancers. After dancing, HT and EA levels were highest in recreational dancers and lowest in competitors who had competed.

Discussion

We compared the effects of dancing on mood in three independent samples. The investigation revealed interesting changes in HT associated with recreational and competitive dancing. HT was significantly higher after dancing in the group of recreational dancers. High HT scores reflect being pleased, optimistic and happy; low HT is associated with being sad, depressed and dissatisfied (Matthews et al., 1990). We found that amateur dancers felt generally positive after dancing. This is consistent with previous findings, indicating that recreational dancing increased well-being and decreased depression and psychological distress (Kiepe et al., 2012). We also observed that HT decreased dramatically following competition and competitors generally felt less pleasure after dancing than other groups. This result suggests that HT might be a marker for stressful experience, as it was found that low pleasure and low positive affect are related to subjectively assessed stress (Watson, 2000). Social evaluation and competing with others may increase levels of stress (Koolhaas et al., 2011), owing to worry about the outcome of competition; this might in turn decrease HT.

We observed a reduction in TA after dancing in all groups; a similar pattern of change has been observed in response to other kinds of physical challenge, e.g. overload evoked by a centrifugation run (Biernacki, Jankowski, Kowalczuk, Lewkowicz, & Deren, 2012), swimming (Valentine & Evans, 2001) or climbing (Green & Helton, 2011), as well as after intellectually demanding situation, such as academic examinations (Zajenkowski et al., 2012). One might argue that this suggests that participating in challenging events induces a reduction in tension regardless of the nature of the challenge; dancing in general combines both physical engagement and social evaluation (an examination-like situation), which can be exaggerated in a competing situation. Decrease in TA following recreational dance suggests that this activity also made physical demands on participants, as Thayer (1996) showed that tension is more likely to be reduced after vigorous and intense exercise.

We observed significant changes in EA in two groups: recreational dancers and competitors who took part in a competition. Interestingly, the changes were in opposite directions in the two groups: recreational dancers reported increased energy after dancing, whereas taking part in competition reduced EA. The former result is consistent with earlier reports (e.g. Thayer, 1996) that physical exercise improved energy. Increases in EA were associated most strongly with moderate, recreational physical activity. After vigorous exercise, the opposite change is usually reported, namely subjects feel more fatigued (Thayer, 1996). We also found that competition reduced energy levels; but before competition, competitors reported higher EA than recreational dancers. These results might be explained by reference to Humphreys and Revelle's (1984) theory that EA is an indicator of motivation. It is possible that competitors were more motivated and tried harder when dancing than participants in the other groups. Higher effort might reflect in greater use of resources (cognitive, emotional and physical) leading to a feeling of fatigue (low energy). This interpretation is in line with the observation that prolonged exposure to states of high motivation leads to a state of lowered motivation and heightened fatigue (Humphreys & Revelle, 1984). Indeed, after competition, competitors' EA was lower than in recreational dancers. It is interesting to speculate on the results of a further measurement of EA at a later time point; it is possible that dancers who had competed would be even more tired then, as it has been reported that the energy response to exercise is delayed (Thayer, 1996).

The current study revealed that mood changes following dancing were different in the three groups. Thayer's (1996) referred to the arousal before activity experienced by competitors preparing to compete as "tense-energy". Thayer (1996) discussed this state from an evolutionary perspective, suggesting that it may be a form of preparation for fight-or-flight behaviour. It seems that competition is related to approach behaviour (high energy), but also induces tension, whose evolutionary function may be preparation for emergency (Thayer, 1989, 1996). Furthermore, in the competitive group, we observed the concurrent declines in HT, TA and EA after dancing, while in the recreational group, the increase of HT was accompanied by increase in EA and decrease in TA. These results are consistent with previous studies (Valentine & Evans, 2001; Zajenkowski et al., 2012) and suggest that the increase of HT may be related to the state described by Thayer (1996) as "calm energy" (low TA and high EA).

Generally speaking, recreational dance produces positive changes in mood. Recreational dancers in our study reported an increase in EA and HT and decrease in TA after dancing. Interestingly, EA and HT were almost unchanged after dancing in the group of competitors who did ordinary training. As Berger and Motl (2000) noted, the improvement in mood following physical activity is higher in the relative absence of competition. It is possible that during preparation for competition, dancers anticipate to some extent how they will feel in the competition; as the feelings evoked by training are not as vivid as in an actual competition, competitors who trained reported mood levels between the other two groups.

In our study, we considered mainly the evaluative aspect of dancing (presence/absence of competition); however, there might be other potential factors influencing the dancers' mood, such as physical and cognitive demands, presence of music and social context. These factors were studied on other samples. For instance, Valentine and Evans (2001) compared the effects of solo singing, choral singing and swimming on psychological states. The authors found that engaging in these activities reduced TA and increased EA and hedonic tone; however, the effects were greater for swimming than for singing, and there was only marginal difference between choral and solo singing. Additionally, it would be interesting to distinguish physical and cognitive components of dancing, as has been recently examined in climbers performing a dual task (word memory and climbing; Green & Helton, 2011).

Finally, the future investigations should include personality which is regarded as one of the most important factors determining mood, with neuroticism and extraversion showing the most robust associations (Jankowski & Zajenkowski, 2012; Matthews, Deary, & Whiteman, 2009; Watson, 2000). Previous studies revealed that neuroticism is a relatively stable predictor of mood, whereas the relationship between extraversion and mood depends on situational factors (Matthews et al., 2009; Zajenkowski et al., 2012). Specifically, it has been found that the correlation magnitudes for extraversion and EA and HT are much lower in demanding situation (e.g. an exam) than in neutral conditions (e.g. typical lecture; Zajenkowski et al., 2012). One may wonder, whether dancing conditions would have similar effects on the personality–mood relationship, e.g. lower correlations during competition than in other situations.

Our results have practical applications for sport psychology. Because competition seem to be an energy-consuming activity, competitors may benefit from arousal-inducement strategies before and after the competition. Moreover, there is strong evidence suggesting that EA has facilitative effects on sustained attention (Humphreys & Revelle, 1984). Many sport disciplines are not only physically but also cognitively demanding (e.g. Green & Helton, 2011). Our study shows that moderate exercise (e.g. a warm-up) before activity may increase available attentional resources required for the efficient performance.

This study has some limitations that have to be acknowledged. The sample sizes of the three groups were rather small and did not allow us to adequately analyse gender specific effects. The groups differed also in terms of age; thus, in future investigation, they should be more balanced. Furthermore, we did not control for several factors that may potentially influence the results. For instance, we did not ask participants about other activities they do outside dance classes. It might be important to know whether they engage in exercise other than dancing and how often they listen to music because these factors seem to play a significant role for mood-regulation in everyday life (Thayer et al., 1994). Finally, it would be worth considering the health-related aspects that determine mood, such as nutrition, cigarette smoking, consuming alcohol (Thayer, 1989).

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