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**Perform Better with Gratitude: Relationship Quality and Performance in Competitive
Ballroom Dancing**

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Abstract

Competitive ballroom dancing as a dyadic sport has many challenges and interesting aspects. It is safe to assume that relationship quality in a sport with only two team members is especially important. Past research has shown that relationship quality can have an effect on team performance. The present quasi-randomized controlled trial tries to investigate whether there is a correlation between relationship quality and performance in competitive ballroom dancing and whether an improvement in relationship quality leads to an improvement in performance. Furthermore, the present research also investigated whether there are differences in relationship quality and the effect of an improved relationship quality on performance depending on the relationship status of the couples. Results show that there is no significant correlation between relationship quality and performance and that there is no difference in relationship quality depending on the relationship status. It could neither be confirmed nor denied whether an improved relationship quality led to an improved performance or whether this effect was larger for romantic couples because the gratitude journal intervention did not work as a manipulation.

Keywords: competitive ballroom dancing, relationship quality, performance, gratitude journal

Der professionelle Tanzsport birgt als dyadischer Sport besondere Herausforderungen und interessante Aspekte. Es wird davon ausgegangen, dass die Beziehungsqualität des Tanzpaares in einem Sport mit nur zwei Teammitgliedern besonders wichtig ist. Vergangene Daten zeigen, dass die Beziehungsqualität einen Einfluss auf die Teamleistung haben kann. Die vorliegende quasi-randomisierte Kontrollgruppen-Studie versucht herauszufinden, ob es einen Zusammenhang zwischen Beziehungsqualität und Leistung im Tanzsport gibt und ob eine verbesserte Beziehungsqualität zu einer Verbesserung der Tanzleistung führt. Zusätzlich wird untersucht, ob es Unterschiede in Beziehungsqualität und im Einfluss der verbesserten Beziehungsqualität auf die Tanzleistung gibt, je nach Beziehungsstatus des Tanzpaares. Die Ergebnisse zeigen, dass es keinen signifikanten Zusammenhang zwischen Beziehungsqualität und Leistung gibt und sich die Beziehungsqualität je nach Beziehungsstatus nicht unterscheidet. Es konnte weder bestätigt noch widerlegt werden, ob eine verbesserte Beziehungsqualität zu einer bessern Leistung führt oder ob es hier Unterschiede bezüglich des Beziehungsstatus' gibt, da die Dankbarkeitstagebuchintervention als Manipulation fehlschlug.

Schlagwörter: Tanzsport, Beziehungsqualität, Leistung, Dankbarkeitstagebuch

Perform Better with Gratitude: Relationship Quality and Performance in Competitive Ballroom Dancing

It takes two to tango. And it is not a team if there are not at least two people working together (Salas, Dickinson, Convers, & Tannenbaum, 1992). This makes competitive ballroom dancing one of the few sports with the smallest team size possible, which comes with its own challenges and interesting aspects.

In all types of dyadic sports relationships, individuals influence each other's behaviours and emotions to a large extent (Gaudreau, Fecteau, & Perreault, 2010). In addition, in ballroom dancing, the dance relationship is a very intimate and special one, because it has so many aspects of a romantic one but is not necessarily romantic (Ericksen, 2011). While the relationship of team members always plays an important role in the performance of a sports team (Heuzé, Raimbault, & Fontayne, 2006), it is save to assume that this role is especially important in a team sport with only two team members. Many team building interventions aim to improve teamwork and aspects such as cohesion in a team in order to help the team perform better and achieve better results (McEwan, Ruissen, Eys, Zumbo, & Beauchamp, 2017).

However, there is not yet any research on this topic as regards competitive ballroom dancing, which is why the present study aims to find out how the relationship between the dance partners correlates with the performance, if there are any differences depending on whether or not the dance partners are also in a romantic relationship and how an improvement in the relationship using gratitude journals as an intervention method affects the performance.

Competitive Ballroom Dancing

History

Competitive Ballroom Dancing has been gaining importance for a long time now. Ever since the *World Dancesport Federation* (WDSF) has been founded in 1957 (under the name of *International Dancesport Federation*), it has been growing in membership and has now 91 National Member Bodies from all over the world, including the *Austrian DanceSport Federation* (OETSV) and the *German DanceSport Federation* (DTV) (World Dancesport Federation, n.d.). The second international governing organization is the World Dance Council with 68 members (<https://www.wdcdance.com>). In an agreement of 2019 between The Special Olympics and the WDSF, the Special Olympics International Board of Directors recognized dance sport as an official sport discipline within the Special Olympics (Special Olympics, 2019). However, even though in 1997 WDSF (formerly IDSF) has been acknowl-

edged as an Olympic Sport Federation and in 2002 the International Olympic Committee has given its green light to dance sport as being eligible as an Olympic sport, dance sport has not been included as an official event at the Olympics yet (Biba, 2002).

Dance Sport Tournaments

The WDSF has a lengthy set of rules for international competitions, which will be now explained. Most of these rules apply for all dance sport tournaments even though there can be exceptions or variations in some aspects. For example, WDSF does not allow same-sex dance couples but the European Same-Sex Dance Association has been organizing same-sex dancing competitions since 2007 (European Same-Sex Dance Association, n.d.). However, the tournaments follow the same procedures as the ones organized by WDSF. Another example is the prohibition of lifts, which does not apply to Showdance competitions (WDSF, 2020). There can also be national differences regarding the rules. In the present study, all participating dance couples only attended competitions in the categories Standard, Latin or 10-Dance, which is why only these tournaments will be explained in detail. Also, the following explanation of the rules applies to the tournaments the couples participated in.

A Standard tournament consists of the five dances Slow Waltz, Tango, Viennese waltz, Slow Foxtrot and Quickstep, performed in this order. Latin tournaments include the dances Samba, Cha-Cha-Cha, Rumba, Paso Doble and Jive, also danced in this order. 10-Dance includes all 10 dances, the order of the disciplines (Standard/Latin) varying depending on the number of rounds, but the order within the disciplines remaining the same.

Each age group and performance class has its own tournaments. In Germany, Austria and Switzerland, performance classes range from D being the lowest over C, B and A to S (“Sonderklasse”). In Germany, the dances Viennese waltz and Paso Doble are not part of the program in the lowest class, in Austria the same applies for the Slow Foxtrot and the Paso Doble. This system helps to facilitate the introduction to the sport. Age groups vary from country to country, but as a rule of thumb it can be said that children, young adults, adults and seniors are separated, and seniors are again divided into 1-3 groups in addition.

In a tournament, regardless of age and performance class, there can be various rounds, depending on the number of total participants. If there are no more than seven couples participating, the tournament only consists of a final round, if more couples participate, there are more rounds before the final. The couples are being rated by an uneven number of external licensed judges, who are former dancers or trainers. The number of judges depends on the size of the tournament, with the minimum number being five. In preliminary rounds, judges award marks to the couples they want to see in the next rounds and the couples who got the

most marks from all judges, pass onto the next rounds, the other couples drop out. In the final round, all judges rate all couples from 1st to last and the average of those ratings is calculated. Thus, judges always rate the performance of dance couples relative to the other competing couples and there are no absolute points awarded for performances. Thanks to the elaborate system, it is always possible to assign a couple to a place even when they dropped out before the final, because the online data include the final place for each couple.

The Importance of Relationship Quality in dance sport

A dance relationship is a very intimate one and it faces many challenges and stressful experiences (Ericksen, 2011). In dance competitions, there is a very high stress level due to factors such as social-evaluative threats from judges, competitors and audience members (Rohleder, Beulen, Chen, Wolf, & Kirschbaum, 2007). This field of sports is not very well researched, especially regarding interpersonal factors between the dance partners. In a study, Gaudreau et al. (2010) examined moderating factors of relationship satisfaction of athletes in dyadic sports. Their sample size consisted of athletes from badminton, synchronized swimming and figure skating, the latter having the most in common with ballroom dancing. They emphasize the feeling of cohesion as an important factor counting towards relationship satisfaction and found a positive correlation between relationship quality and the feelings of individual self-determination. This leads to the assumption that these factors could be important in the relationship quality of ballroom dancers as well. All in all, their findings underline the importance of a high relationship satisfaction in dyadic sports.

In ballroom dancing, there is also the challenge to work together not only in competitions but also in training sessions, which always involves a lot of cooperation and synchronicity and also physical intimacy. For a dance partnership, it is necessary for the partners to have a physical closeness normally reserved for sexual partners, including touching, holding hands, hugging or kissing (Ericksen, 2011). As a result, dance partnerships often turn into romantic partnerships, or a dance partnership results from a romantic partnership in the first place. For her book, Ericksen (2011) interviewed professional dancers who explained that there were advantages such as spending more time together due to practice sessions or portraying emotions more easily in competitions and disadvantages such as personal conflicts affecting the dance relationship, to being romantically involved with a dance partner. On the whole, there seems to be a difference between dance couples, which are romantically involved and dance couples that are not. The question remains, whether being in a romantic relationship improves the relationship quality of a dance partnership, which is what many couples believe. According to Ericksen (2011), this is a common false belief between cou-

ples, whereas in her opinion a dance relationship improves a romantic relationship and not the other way around.

For this research, it is interesting to see whether dance couples, which are in a romantic relationship, differ in relationship quality from those couples, which are not. On the one hand, dance couples in a romantic relationship could have more experience working together and solving conflicts and could also have a more intimate relationship and attraction and thus a better overall relationship quality. On the other hand, the conflicts of the romantic relationship could affect the dance relationship and the other way around. The fact that non-romantic couples can focus more on the dance-related topics of their relationships, could also help them having a better relationship overall. For this reason, the first hypothesis wanting to investigate this possible difference is stated without direction.

Hypothesis 1: Dance couples that are in a romantic relationship differ in relationship quality from dance couples that are not in a romantic relationship.

Relationship Quality and Performance

The quality of relationships is important in many aspects of professional life where people come to work together. Also, there is an effect on the performance depending on the relationships with co-workers. For example, Chiaburu & Harrison (2012) found that co-worker support is linked positively to task performance. Various aspects of a good relationship quality such as trust are essential for a good team performance (De Jong, Dirks, & Gillespie, 2016). The better the relationship with co-workers, the better employees can work together and as a result they associate more positive emotions with their workplace, which leads to better performances and outcomes altogether (Colbert, Bono, & Purvanova, 2015).

For sports teams, it is especially important that the team members work well together because they can only as a team successfully achieve their purposes (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008). Therefore, there have been numerous teamwork interventions with the aim of improving team effectiveness. In 2017, McEwan et al. conducted a systematic review and meta-analysis analysing 51 articles with 72 unique interventions. They categorized teamwork interventions in four categories consisting of 1) measures providing didactic education to team members, 2) workshops with group activities such as discussing team goals, 3) simulation trainings for training teamwork skills such as interpersonal communication and 4) incorporating team reviews in situations where teams actually perform (McEwan et al., 2017).

They found positive and significant medium-sized effects for teamwork interventions not only on teamwork, but also on team performance. This shows how important it is for a team to work well together. In a sports team, where only two people are involved, working together well is especially important and so is the relationship between these two team members. However, the question remains whether working together well and having a good relationship is the same. A meta-analysis from Beal, Cohen, Burke, & McLendon (2003) focused on cohesion and its relationship with performance. They found that there is a correlation between the two factors, being even stronger when performance was defined as behaviour instead of outcome. Even though cohesion is not the same as relationship quality or satisfaction, it is an important indicator of relationship quality (Gaudreau et al., 2010). It is therefore safe to assume that performance is also positively correlated with relationship quality as a whole.

The present study wants to lay the emphasis on relationship quality as a whole and its impact on performance, regardless of interventions aiming to improve team performance. This leads to the following hypotheses:

Hypothesis 2: The higher the relationship quality of a dance couple, the better their performance.

Hypothesis 3a: An improvement in relationship quality leads to an improvement in performance in dance couples.

Gratitude Journal

The present study wants to examine how improving the relationship between two dance partners leads to an improvement in the dance performance. In order to improve the relationship, data has been gathered on interventions concerning this matter leading to the decision to use gratitude journals as an intervention method. The interventions mentioned in the meta-analysis by McEwan et al. (2017) and most teamwork intervention methods are aimed to improve the operating procedures of a team and somehow always include actual physical or verbal interactions between the team members. Therefore, the interventions affect team processes directly. In the present study, the idea was to improve the relationship quality on an emotional level, which does not include performance-related interventions. In that way, it can be made sure that the performance would not improve due to better performance routines but only because of the improved relationships.

Gratitude journals have become more important in the last years due to an uprising of positive psychology interventions, which are “treatment methods or intentional activities that

aim to cultivate positive feelings, behaviors, or cognitions” (Sin & Lyubomirsky, 2009, p. 468). These interventions have shown positive effects on well-beings and reduce depressive symptoms (Sin & Lyubomirsky, 2009). Emphasizing feelings of gratitude is a key aspect of positive psychology interventions and has already been researched in the field of sports. For example, two cross-sectional studies by Chen & Kee (2008) showed that dispositional gratitude positively predicts team and life satisfaction. The most important findings for the present study concern research about gratitude and relationship quality. Algoe, Haidt, & Gable (2008) provided evidence that naturally occurring gratitude in college sororities could form and improve relationships. Similarly, Algoe (2012) stated that gratitude may be a mechanism to fuel upward spirals of mutually responsive behaviour and be thus important for forming and maintaining relationships. A cross-sectional study by Gordon, Impett, Kogan, Oveis, & Keltner (2012) also found that people, who are more grateful towards their partners, report being more responsive to their partners’ needs, more committed to the relationship and also described as displaying behaviour of appreciation towards their partner by outside observers.

Experimental research seems to confirm these correlational studies. Emmons & McCullough (2003) found that an exercise of listing content of gratitude over the course of a fixed time period improved not only well-being, but also a sense of connectedness to others. In addition, Bartlett, Condon, Cruz, Baumann, & Desteno (2012) conducted a research inducing momentary gratitude and provided evidence that gratitude promotes social affiliation and is able to strengthen relationships by facilitating socially inclusive behaviours.

A study by Algoe, Gable, & Maisel (2010) consisted of 67 couples completing questionnaires over the course of 14 days including questions about how grateful they were towards their partner. They found that change in relationship quality was predicted by the previous day’s gratitude. Similarly, a qualitative study with 4-evening-questions, a positive daily recap including gratitude (Ebner, 2017), also used a time frame of 14 days to have participants fill out a journal every night before going to bed. These two instructions were the basis of the present study in terms of deciding for how long to set the intervention and how this type of intervention with a gratitude journal should look like.

Even though it is assumed that a gratitude journal will have an effect on every couple, regardless of their relationship status, there is more data as regards gratitude inducing positive emotions in romantic couples and having an effect here. Thus, the forth and last hypothesis takes this into account.

Hypothesis 3b: For dance couples in a romantic relationship, the improvement in relationship quality will lead to a larger improvement in performance than for couples, who are not in a romantic relationship.

Method

Participants and Recruitment

Thirty-six couples took part in the study, resulting in a total sample size of $n=72$. This number met the target sample size, which was calculated with 28 couples. To be included in the study, couples had to dance together on a regular basis and participate in dancing tournaments. There were no exclusion criteria regarding age or ethnicity. If participants were not of age, their parents had to sign an informed consent in addition to their informed consent.

Since only different-sex couples participated, 50 % of the sample size consisted of male and 50 % of female participants. The mean age was 35.65 years ($SD=16.00$), ranging from 11 to 64 years. Of the 36 couples, 19 couples were from Austria, 16 from Germany and one couple from Switzerland. The assessment of the relationship status showed that 21 couples (58.30 %) were in a romantic relationship. Every performance class from D to S was represented, with the S class ("Sonderklasse") being the mode (13 couples).

The recruitment procedure included many different measures and lasted around three months. First, potential participants were approached in person in various dance sport clubs in Vienna. However, this was difficult due to the fact that most couples have different practice schedules and there are rarely fixed dates where a lot of couples can be approached at once. Therefore, there were also flyers with an overview about the study left in the dance sport clubs. In addition, couples were approached in person at tournaments in Vienna. This also resulted in the inclusion of some couples but was also difficult because there were not as many tournaments with enough participating couples who also danced together on a regular basis. Due to financial restrictions, it was not possible to travel to different cities in order to recruit participants at other national or international tournaments. In addition to recruiting in person, phone calls with approximately 90 national and international dance sport clubs were conducted. In that manner, conversations with administrative employees and trainers of dance couples were possible. They agreed to forward the request to participate in the study to their dance couples and also shared the information about the study in various Facebook groups or club-internal Whatsapp groups. The majority of the participating couples were recruited this way. Finally, 299 professional dancers were contacted via Facebook with a tailored message

containing the most important information about the study procedure and asking them to participate.

Research Design

First, couples were assigned quasi-randomly to the experimental group or the control group, allocating every second couple to the control group. It was not possible to use a full randomization due to the fact that couples were included into the study at various different time points, because the recruitment period lasted fairly long.

The control group was placed on a waiting list and completed the intervention after the experimental group had finished the intervention period and posttest. This procedure was decided in order to collect more data about the success of the intervention and effect of relationship quality on performance.

The experimental phase of the study included a pretest (t0), an intervention phase and a posttest (t1). For the pretest (t0), all participants of both experimental group and control group were asked to fill out an online questionnaire including demographic data and questions regarding their relationship quality. The present study was conducted in cooperation with a different study using a shared sample, which is why the online questionnaire also included questions regarding variables measured in the second study. However, they are of no interest in the present study. Before starting with the questions relevant for the studies, participants gave their informed consent on the starting page. For participants under age, there was a separate informed consent created and sent to one parent.

Additionally, data about the performance at tournaments was collected. Competitive ballroom dancing results are public and accessible for anybody. Thus, the results of all tournaments were retrieved from online platforms such as www.worlddancesport.org and www.dancesportinfo.net. Sometimes it lasted a while before the results were found online, which was why many couples forwarded the results directly via e-mail.

After collecting all the pretest data, participants entered the intervention phase. In this phase, the control group received no intervention, while the experimental group completed a gratitude journal about their partner daily during the course of two weeks. This journal was the measure taken in order to improve the relationship quality. After two weeks of intervention, the intervention phase stopped and the posttest (t1) was taken. For the posttest, relationship quality and performance were assessed once again. Relationship quality was assessed with the online questionnaire sent to all couples after completing the gratitude journal. Additionally, if the participants were assigned to the experimental group, the online questionnaire

included the question if, and how often, participants completed the gratitude journal and if they showed the journal to their partner.

After the posttest, those couples that were assigned to the control group received the intervention as well and completed the gratitude journal during the course of two weeks. There was a third time point (t2) only concerning this group where relationship quality and performance were assessed once more and participants were asked about their completion regarding the gratitude journal.

Due to the fact that not all couples took part in the same dance tournaments at the same dates and recruitment and inclusion lasted several months, pretests and posttests as well as the intervention period took place at various time points.

Measures

Demographic Data

The demographic section of the questionnaire asked the participants to provide their age, the performance class in which they dance (e.g. “D class”), the country in which they dance, the age group they dance in (e.g. “Sen. II”) and the information about whether they are in a romantic relationship or not.

Relationship Quality Assessment

Relationship quality was assessed with the Relationship Assessment Scale (RAS) by Hendrick (1988). There was a high reliability reported in previous studies for the scale, with a Cronbach’s alpha of .86 (Vaughn & Matyastik Baier, 1999). The scale includes seven items asking participants to rate their perceived relationship quality on a 5-point Likert scale with response options ranging from 1 to 5. An example item is *How good is your relationship compared to most?* Of the seven items, two items had to be inversed for calculating the total perceived relationship quality, which was the mean value of all items. Thus, the perceived relationship quality also ranged from 1 to 5, a higher score showing a higher satisfaction with the relationship.

In professional ballroom dancing, each couple’s performance is always rated as a joint outcome; there are no ratings for individuals. Therefore, it was important to adapt the other parts of the study to this fact. As a result, all measured values were joined to one value. So even though all participants filled out the questionnaires regarding relationship quality separately, for the analysis of the relationship it was important that there was a joint value for one couple (consisting of two participants). Thus, it was decided to calculate the mean value of the relationship quality values of both participants in order to receive one value for each couple. So if one participant rated the relationship quality with a value of 4.0 and his/her partner

rated it with a value of 4.4, the value used for further analysis of the data of this study was the mean value of 4.2.

The relationship quality was assessed at t0 and t1 for the experimental group and at t0, t1 and t2 for the control group.

Assessment of performance

In professional ballroom dancing there are tournaments almost every weekend in the tournament season. However, most of these tournaments are very different and not comparable very well because of a varying number of participants. Numbers of participating couples can range from 2 to over 100. As a result, it is not possible to use the absolute final place as a valid number. It was also considered to take the marks awarded to the couples during a tournament into account. However, the same problem would arise using the marks because the different number of participating couples would lead to a distortion of the results here as well.

As a result, it was decided that for the assessment of the performance, the average relative results of tournaments would be taken into account. Mathematically speaking, this meant that the final place the couple reached in their performance class was divided through the total number of participants in that performance class at the tournament. If a couple reached third place in their class out of 15 participants, the result was $3/15 = 0.2$. This calculation means that the better the relative performance in a tournament, the lower the absolute calculated number.

To improve validity of the numbers, the result of more than one tournament was looked at, if possible. For purposes of continuity, a maximum of four tournaments was set for each time point. For each couple, these 1-4 tournaments were the last 1-4 tournaments they participated in, up to the tournament right before the examination. The maximum number of participants a tournament had to have in order to be included was two. After collecting the data of 1-4 relative tournament results, the average of these results was calculated. This procedure was done for every time point.

The following table shows an example of the calculation of the average performance for one time point for two of the couples.

Table 1*Calculation of Performance*

Couple	Tournament 1	Tournament 2	Tournament 3	Tournament 4	Total average performance
1	0.2	0.5	0.1	0.25	0.26
2	0.7	0.6	0.8	0.8	0.73

Gratitude journal

The gratitude journal was the intervention set in order to improve relationship quality. The couples were asked to fill out a gratitude journal every night over the course of two weeks. This journal was used only to list things the participants were grateful for regarding their partner. However, it was not limited to topics as regards their training sessions or dancing in general. Instead, participants were asked to list any things they were grateful for with regard to their partner, no matter the context or the topic. What was important was that participants would try to imagine the situation they were listing and really feel the emotion of gratitude. The concrete instruction sent to the couples was the following:

In the following 14 days, please list what you are grateful for to your partner. Everything that comes to mind is fine, there is no right or wrong answer. It can be a small thing such as your partner opening the door for you, or a bigger thing such as emotional support in a crisis. Please try to actively feel the emotion of gratitude for a moment. The content is only for you, you don't have to show it to anyone. Nevertheless, it is important that you try to write down something every day.

This instruction was sent to all participants attached to a template they could print out and use as the gratitude journal. The template included 14 days with a heading of each day from 1-14 and four lines to write on. The couples were told that they did not need to use the template and that it was just a tool they could use. It was also emphasized that the content of the journal would not be collected and that they would not have to share it, not with their partner nor with the study conductor. However, it was noted that if they wanted to, they could share the content with their partner. A reminder was sent to all couples every day, unless they explicitly stated that they did not want or need this.

The final online questionnaire included a question asking about whether they shared the content of the gratitude journal or not. Additionally, the posttest included the question how often the participants filled out the gratitude journal with possible answers being *1=never, 2=10-14 times, 3=5-9 times and 4=1-4 times*.

Results

Exclusion of participants

In general, adherence was very high because there always had been some kind of personal communication with the couples, either in person or via e-mail. It was planned to exclude couples who checked “1” (never) or “4” (1-4 times) for the question how often they completed the gratitude journal but this applied to none of the couples. However, five couples had to be excluded because either only one person of the couple completed the online questionnaire or because one or both parts of the couple only completed the pretest but not the posttest. One couple had to be excluded because the tournament they wanted to participate in, which would have been counted as the only posttest tournament, was cancelled. Cancellation of tournaments due to illness or time issues happened to some of the couples but for the other couples there were enough tournaments to compensate.

Descriptive Statistics

As already mentioned above, 21 couples (58.3%) were in a romantic relationship and 15 (41.7%) were not. Nineteen (52.8%) couples dance in Austria, 16 (44.4%) in Germany and one couple (2.8%) in Switzerland.

Results show that the mean relationship quality at baseline was 4.44 for all couples. This is a very high value with 5 being the highest value possible for relationship quality. To compensate for this obvious ceiling effect the value was transformed for the statistical calculation.

The mean performance at baseline was .51 for all couples. In order to demonstrate the data in a more clear way, all performance values were inverted, making the new mean value of performance at baseline .49. Before the transformation of performance, a higher relationship quality was demonstrated by a higher value in the RAS and a higher performance was demonstrated by a lower value. Thus, the inversion helped to minimize this confusion.

Hypothesis 1: Relationship Quality and Relationship Status

To test the first hypothesis, a two-sample t-test was calculated comparing the mean relationship value of couples, which are in a romantic relationship with couples, which are not. The mean values of both groups are listed in the table below.

Table 2*RQ Values Romantic vs. Non-Romantic Couples*

	<i>n</i>	<i>M</i>	<i>SD</i>
RQ romantic	21	4.43	.41
RQ non-romantic	15	4.45	.44

As shown in the table, the average relationship quality for couples that are not in a romantic relationship, are higher. However, the two-sample t-test showed that there is no significant difference between the two values; $t(34) = -.15$, $p = .88$. This leads to the assumption that being romantically involved does not benefit nor harm the dance relationship. Hypothesis 1 has to be rejected.

Hypothesis 2: Correlation between Relationship Quality and Performance

To test the second hypothesis, a bivariate Spearman correlation was conducted with relationship quality and performance at baseline for all participants. The Spearman correlation was used because the relationship quality values at baseline were not normally distributed. In order to be able to look at the correlation, it was necessary to first transform the data. For relationship quality, the data was skewed negatively, which means that there was a ceiling effect (most couples reached a very high relationship quality). To correct for that, a logarithm was used and the data was transformed. From this moment forward, it will be stated whether the reported relationship quality is reported by the gross value or the transformed value. Relationship Quality will be referred to as RQ.

Additionally, the performance of the couples had to be inverted because before doing that, a higher score in performance meant a lower performance, which is rather confusing to report. As a result, all performance scores were inverted. The following table shows the relationship between the two variables.

Table 3*Correlation Between Relationship Quality and Performance*

RQ			RQ (trans)			Performance (inv.)			Correlation		
<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>Corr.</i>	<i>Sig.</i>
36	4.44	0.42	36	0.59	0.26	36	0.49	0.24	36	.08	.65

$p < .05$

As shown in the table, using the transformed data for performance and relationship quality, the bivariate Spearman correlation showed no significant correlation between per-

formance and relationship quality. This means that even though there is a positive correlation - meaning the higher the relationship quality the higher the performance - this correlation is not significant and therefore only a tendency. Hypothesis 2 therefore has to be rejected.

Hypothesis 3: How does a rise in relationship quality lead to a rise in performance?

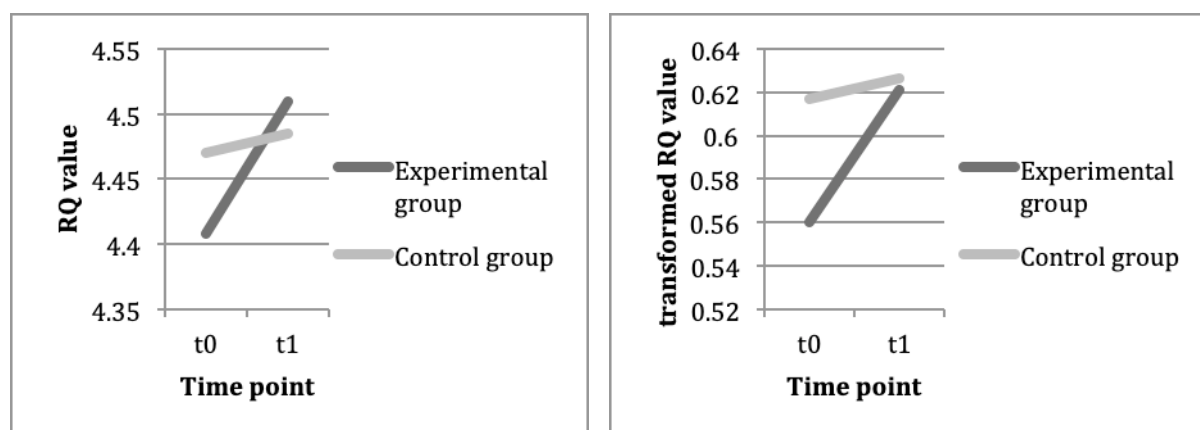
Manipulation Check

In order to assess if a rise in relationship quality led to a rise in performance, it has to be tested whether conducting the gratitude journal for 14 days worked as an intervention to improve the relationship quality. For that, a mixed ANOVA with repeated measures was used to determine the effect. *Time* was used as the within factor and *group* was used as the between factor. This analysis was made for the time points t0 and t1, t0 being the pretest and t1 being the posttest, comparing experimental group and control group (waiting list group).

The change in RQ between t0 and t1 is shown in the following figure including both the raw values and the transformed RQ values.

Figure 1

Manipulation Check Control Group vs. Experimental Group



Note. Left side, gross RQ value change, right side: transformed RQ value change

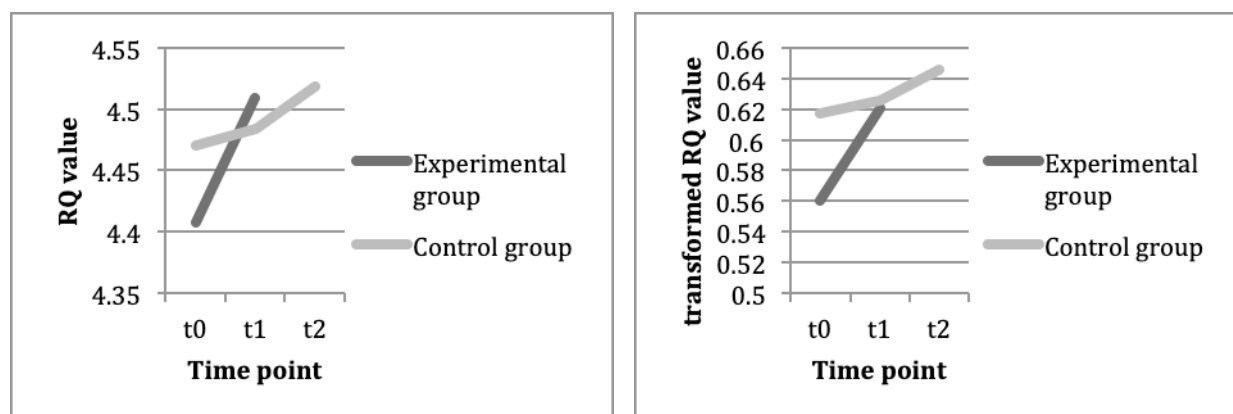
As shown in the chart, the relationship quality improved visibly in the experimental group from a gross value of 4.41 to a value of 4.51 or from a transformed value of .56 to .62, which was the group that received the gratitude journal intervention. The values of the control group improved less strongly from a value of 4.47 to 4.49 or of .62 to .63 respectively. However, the mixed ANOVA using the transformed RQ values showed that this effect was not significant and that the improvement of the relationship quality for the experimental group was not significantly larger than the improvement in the control group ($F(1,34)=1.86$, $p=.18$).

It is also worth mentioning that the control group started with a higher relationship quality as the experimental group even though a t-test comparing the transformed RQ means showed that this difference is not significant ($t(34)=.63$, $p=.53$).

To look at more data, it is also possible to check whether there was a significant rise in relationship quality for the control group, which was on a waiting list and received an intervention between t_1 and t_2 . However, even though the relationship quality improved from a mean value of 4.49 to 4.52 or 0.63 to 0.65, if you look at the transformed data, this rise was also not significant ($F(1,18)=.84$, $p=.37$). The following figure shows the relationship values of both groups over the course of the three time points. As mentioned above, t_2 only applies to the control group put on the waiting list. The figure shows that there is a difference between experimental group and control group between time points t_0 and t_1 , however, from the mixed ANOVA it is known that this difference is not significant. Also, it is shown that the relationship quality did not rise significantly for the control group between time points t_1 and t_2 .

Figure 2

Manipulation Check Both Groups at all Time Points



In conclusion, it has to be noted that the manipulation did not work and that the intervention of completing the gratitude journal over the course of 14 days did not improve the relationship quality significantly. There was also no effect of neither how often participants filled out the gratitude journal ($F(1,22)=3.03$, $p=.01$) nor of the sharing of the gratitude, meaning whether they did or did not show their diary to their partner ($F(1,22)=.63$, $p=.61$). This result makes the analysis of the following data less meaningful from a statistical point of view because the intervention working was the requirement for assessing, whether an improvement in relationship quality lead to an improvement in the dance performance of the couples. Thus, the following data can only be reported and looked at keeping this restriction in mind. However, as there was an improvement in relationship quality, it is still interesting

to look at whether the performance improved, even though the improvement in RQ was not significant.

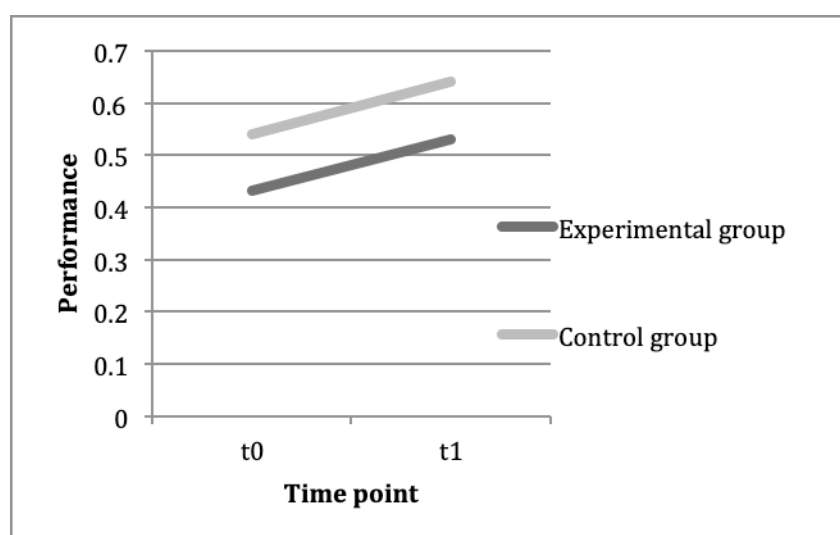
Hypothesis 3a: Change in performance

For analysing the data of the performance of the participating couples, the same method was used as for the manipulation check. A mixed ANOVA with repeated measures was used to determine the change in performance. *Time* was used as the within factor and *group* was used as the between factor. This analysis was made for the timepoints t0 and t1, t0 being the pretest and t1 being the posttest, comparing experimental group and control group (waiting list group).

The change in performance between t0 and t1 is shown in the following figure using the inverted performance values. All reported performance values are the inversed values.

Figure 3

Change in Performance Control Group vs. Experimental Group



The figure already shows that there is no difference in the performance rise between control group and experimental group. The experimental group's performance increased from .43 to .53, whereas the control group's performance increased from .54 to .64. The mixed ANOVA confirms the results that there is no significant difference in the amount of increase between both groups ($F(1,34)=.002$, $p=.96$).

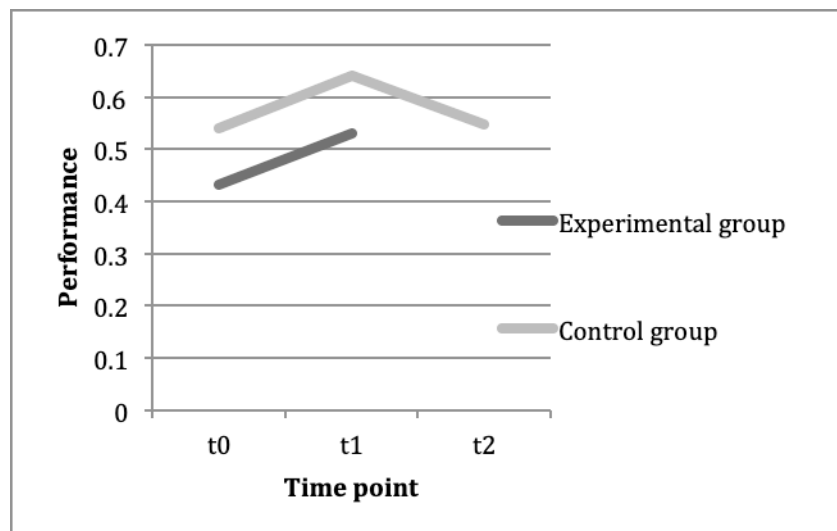
The rise in performance seen in the figure is therefore explained by the factor *time*. This rise for both groups is, however, significant ($F(1,34)=5.93$, $p=.02$), which means, that both groups improved their performance significantly over time, regardless of their group, so the group (and therefore the condition of the having received the intervention or not) had no effect on the rise in performance.

Interestingly, the control group started with a higher performance value (.54) as the intervention group (.43). A t-test comparing the two means showed that this difference is not significant ($t(34)=1.36$, $p=.18$), but taking into account that the relationship quality of the control group was also higher as the RQ of the intervention group (also not significantly), this could again hint towards the tendency of a positive correlation between relationship quality and performance.

For the sake of completeness, it was also assessed whether the control group showed a significant rise in performance between t1 and t2, which was when they received the intervention. The change of performance for both groups, including the third time point for the control group, is shown in the following figure.

Figure 4

Change of Performance for all Time Points



The figure shows that the performance of the control group actually declined between t1 and t2 from a value of .62 to a value of .55. However, the mixed ANOVA showed that this decline was not significant ($F(1,16)=1.39$, $p=.255$). Still, it is very interesting to see that not only did the control group not have a positive effect after the intervention but showed a tendency of getting worse in their performance. But considering the decline was not significant, there is not a lot of information to be drawn from this.

Also, when looking at all the data regarding performance improvement, it has to be emphasized again that due to the lack of improvement in relationship quality, it was not expected that the improvement for the intervention group differed significantly from the improvement in the control group, or that the control group improved their performance between t1 and t2. It was nevertheless interesting to look at the data because it could have been possible that an improvement in performance happened after completing the gratitude journal

even without improving the relationship quality visible in the RAS. However, this was not the case. To summarize, hypothesis 3a can neither be confirmed nor rejected because the manipulation did not work.

Hypothesis 3b: Difference between couples who are in a romantic relationship

In order to assess whether the relationship status of the couples had an effect on the improvement of the performance after the improved relationship quality, a mixed ANOVA with repeated measures was conducted, using group (experimental group vs. control group) and relationship status (romantic relationship vs. non-romantic relationship) as between factors. Results show that there is no significant effect neither for the manipulation check ($F(1,33)=1.56, p=.22$) nor for the change in performance ($F(1,33)=.01, p=.92$). This means that the relationship status had no effect on the change in relationship quality or performance between the two groups. However, due to the fact that the manipulation did not work, hypothesis 3b cannot be rejected or confirmed.

Discussion

Due to its dyadic nature and the fact that in these types of sports individuals influence each other's behaviors and emotions largely (Gaudreau et al., 2010), relationship quality between the partners in competitive ballroom dancing is really important. The present study aimed to investigate how relationship quality and performance are related in this very specific dyadic sport. However, none of the hypotheses regarding this topic could be confirmed. Even though the correlation between relationship quality and performance was positive, this correlation was not significant. Additionally, even though the intervention used to improve relationship quality did raise relationship quality, this rise was not significant. As a result, the hypotheses trying to prove a relationship between a rise in relationship quality and a rise in performance could not be confirmed, because the manipulation did not work. Nevertheless, the fact that relationship quality did improve (even though not significantly) indicates that a gratitude journal could still be a suitable measure for improving relationship quality. Interestingly, there seems to be no significant difference in dance sport couples depending on their relationship status. The average relationship quality of dance partners, who are in a romantic relationship, does not differ significantly of dance partners, who are not. This could hint towards confirming Erickson (2011), who assumed that a dance relationship is a strong one often leading to romantic relationships and not the other way around. In her research she found that many dancers described dance relationships as more stable and with less conflicts when dancers were not romantically involved. Others describe a lack of authenticity in por-

traying deep emotions without the romantic bond. Thus, the present study seems to confirm that there are upsides and downsides to either relationship status.

It is also interesting to mention that many participating couples provided individual feedback about the study procedure and intervention and this feedback was almost exclusively positive. Couples reported that they enjoyed taking part in the study and that they noticed changes in their relationships and had less conflicts in their trainings sessions, which leads to the assumption that there has been an improvement, even if not visible in the data.

It has not yet been tried to include measures of positive psychology in the field of dyadic sports in order to improve relationship quality and as a result performance. The present study has therefore been a pioneer and could provide important research ideas for the future. Also, the findings not from the statistical data but arising from the personal feedback of the couples can be applied not only to the specific topic of dance sport but also to other dyadic relationships. In dance sport, there are many challenges couples are faced with, which can represent real-life issues and topics, from conflicts, miscommunication, leading and following, up to working together to achieve a common goal and practicing intimacy and trust (Ericksen, 2011).

As a result, knowing that positive psychology measures such as gratitude journals have some (even if not statistically significant) impact on dance relationships can be used for other dyadic relationships. Businesses have been practicing work team-building interventions analogously to sports team-building interventions in order to improve performance (Cannon-Bowers & Bowers, 2006). In other words: Understanding how to improve a dance partner relationship and how to improve a joint dance performance can help understanding how to improve any dyadic relationship and improve any joint performance.

Limitations and Future Research

The most obvious concern regarding the study is of course the fact that the manipulation check did not work and that only tendencies of an improved relationship quality were visible. This could lead to the assumption that a gratitude journal applied over the course of two weeks is not an appropriate measure to improve relationship quality. As a result, it could be interesting to repeat the study with a different intervention used to improve relationship quality. For example, a study by Coulter and Malouff (2013) showed that relationship quality in romantic relationships improved significantly after couples engaged in a 4-week online relationship excitement program. In this randomized control trial, couples were asked to write down a list of potentially exciting activities and engage in at least one exciting activity of this list every week for 90 minutes for four weeks. Results of these interventions showed that the

couples, who were assigned to the intervention condition had significantly higher levels of relationship satisfaction not only at the posttest right after but also four months after the intervention. This intervention was also considered in the present study. However, for one thing this intervention would have meant a lot of effort for the participating couples. It was already difficult to recruit enough participants and using this method would have possibly meant many drop-outs from the current study. For another thing, the excitement intervention was only applied to romantic couples. Of course, every healthy relationship is based on positive connectivity and positive behaviours (Snyder & Lopez, 2007). However, there is a lot more research on romantic relationships being affected by excitement in a way that benefits the relationship such as a study from Reissman, Aron, and Bergen (1993), who also asked married couples to engage in exciting activities. Overall, excitement seems to benefit romantic relationships directly and also seems to induce an arousal, which can not only lead to but also be confused with attraction (Dutton & Aron, 1974). As a result, it would have been less likely that the excitement had worked for all couples, even the couples, which are not in a romantic relationship. For gratitude journals, there is a lot of research regarding effects on positive affects and relationship, which is why this intervention was chosen.

Alternatively, it could be interesting to not only look at the intervention but also at the measure of relationship quality. Even though the Relationship Assessment Scale showed a high reliability in previous studies (Vaughn & Matyastik Baier, 1999), in the present study it seemed to be a limiting factor. With the average relationship quality of the couples at the baseline already being at 4.44, there was very little room for improvement. The reason for this could be that the sample consisted of couples with a very high relationship quality because of the challenging nature of ballroom dancing and the fact that in order to work together on a professional base in dance sport it is necessary for couples to have a strong relationship. In that case, the intervention would have to have been extremely effective to improve the relationship. In the research of Vaugh and Matyastik Baier (1999) conducted to assess validity and reliability of the RAS, the mean value of relationship satisfaction was 3.31 in a sample of 117 persons. These results suggest that dance couples could have a higher average relationship. However, in order to safely assume this deviation, further research would be necessary.

It is also possible that the Relationship Assessment Scale is not an ideal measure to assess relationship quality because the questions are rather general. For example, there is a question regarding issues in the relationship (*How many problems are there in your relationship?*) but the question is not very detailed. In order to be more specific, there could be a con-

crete question asking about how often conflict arose in the last week for instance. Many couples gave an individual feedback regarding the study and most couples reported back that they not only enjoyed the intervention but that it made them look at the relationship in a more positive light. Four couples reported back that they had less fights, one couple reported that they stopped fighting at all and one couple described how they valued their partner more. This individual feedback leads to the assumption that the perceived relationship quality may have improved more than the questionnaire may suggest. Of course, there was a rise in relationship quality, which was not significant and could describe this rise. But alternatively, it could be possible that by using a different measure than the RAS, this rise would have been significant.

One important aspect not covered by the RAS is the factor trust. Trust is a very important factor in a personal relationship and takes an important part in how a person feels in a relationship (Larzelere & Huston, 1980). Furthermore, in their large meta-analysis, De Jong et al. (2016) showed how important trust is for a feeling of teamwork and for performance. Especially in dancing, where there are clear roles of leader and follower, trust is an important aspect in order to perform well. Thus, the fact that the RAS does not cover this topic leaves room for another measure being able to cover this aspect as well.

As a result, it could be of interest to repeat the study and use a different measure for relationship quality. However, it is not easy to find a scale that applies not only to romantic but also non-romantic couples. The Dyadic Adjustment Scale (Spanier, 1976), for example, includes many more items and is more specific but is difficult to use when a couple is not romantically involved. Thus, the measure of relationship quality remains a challenge as regards this topic.

The second big limitation of the present study is the difficulty to measure and compare the performance of the participating couples, or rather couples in dance sport as a whole. For one thing, the subjective nature of the ratings in dance sport makes it very difficult to talk about an objective dance performance because a better rating from judges does not necessarily mean that the couple has really improved in their performance. For another, the tournaments looked at were very different regarding the number of participants and the general size of the tournament (regional, national, international). Of course, the relative performance was used in order to avoid a bias and in addition the mean of various tournaments was used when possible because of this reason, but there is still uncertainty remaining whether it is possible to compare these tournaments. As a result, for future research it could be of interest to measure performance in a different way. One possibility, which was also suggested by some of the

couples themselves, would be to only compare tournaments that are really comparable, meaning to only compare the same tournaments. Since most of the bigger tournaments take place once a year, it could be an option to have the pretest in one year and the posttest one year later. However, this would come with a series of other problems such as the question when and for how long the intervention should take place and the fact that this requires a lot of commitment from the couple's side.

Alternatively it could be interesting to completely change the performance rating system in order to try to make it more objective. The best option here would be to hire objective and independent judges who could rate the performance of the couples either by attending their tournaments or by watching a videotape. However, even though this would be a good measure, it would require a lot of time and effort of these objective judges, because in order to be really objective it would be best if it was more than one judge. This option was considered for the present study but it resulted to be too costly and effortful. For future research, this could be a good option however.

Finally, with the findings of Beal et al. (2003) showing that cohesion is a better predictor of performance when performance is defined as behaviour as opposed to outcome, it could be interesting to investigate, whether a better relationship quality leads to a better *behavioural* performance, which is not necessarily shown in the outcome. The problem of evaluating this in future research, however, remains, with external objective judges again being a costly and complicated option.

Conclusion

To summarize, even though the manipulation did not work and the present study lacks in contributing statistically relevant results, there are still findings worth reporting and possibly evaluating in future research.

In particular, it has to be noted that ballroom dancing is yet a largely unknown but highly relevant field of research and worth exploring further.

Dance sport is not only a highly challenging but also very expensive sport. The sample of the present study consisted only of couples that earn their money on a different way and reported dance sport as a large additional expense to their daily life. Similarly, almost no professional dancers earn enough money through competitions, but instead either work in a completely different field or sell their services in form of dance classes or studios (McMains, 2014). However, not only did the dance community show an exceptional amount of cooperativeness to participate in the study in form of recommending friends to participate as well or

posting the flyer provided for the study in Facebook groups, but also the sport on its own presents many aspects worth researching about.

For example, dance sport athletes show high levels of skills on many levels such as coping with an enormous stress in competitive situations, coping with many uncontrollable factors such as the performance of the competition or handling the fact that their performance is evaluated by the subjective ratings of judges. All in all, dancing competitions contain many characteristics that of social-evaluative threats in real life (Rohleder et al., 2007). This again shows that many understandings can be learnt from looking at dance sport and applying these understandings to every-day life.

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