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Research Note: "Doping" and Dancing

Substance Use and Misuse Among Professional Ballet Dancers

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This study investigated substance use and misuse among 16 female and 9 male Croatian ballet professionals in 2008 using an original questionnaire. We analyzed social, personal, activity- and training-related, and educational factors, and criteria such as: binge alcohol drinking, cigarette smoking, appetite suppressant consumption, analgesic use, and actual and potential "doping" habits. Frequency tables and rank-order correlation were calculated. More than one third of the male dancers reported binge drinking, while 20% of the females smoked more than a box of cigarettes per day. Almost 25% of these dancers will use "doping" if it will ensure successful ballet performance, regardless of negative health consequences. In males, the risk of potential "doping" behavior increased with age. In females, education level was negatively related to cigarette smoking, but positively correlated to potential "doping" habits and behavior. In both genders, religiousness was the factor negatively related to the following: (1) potential "doping" behavior and (2) belief that "doping" exists in professional ballet. Results suggest that there is evident need for more specific medical and/or psychological services in professional ballet. The study's limitations are noted.

Keywords ballet; physical training; stress; questionnaire construction; performance-enhancers; "doping"

Introduction

Ballet is a highly technical form of dance, with its own vocabulary that is closely related with the physical performance of the dancers, and therefore, to serious and intensive training and stressful practice (Guidetti, Emerenziani, Gallotta, Silva, and Baldari, 2008; Koutedakis and Jamurtas, 2004).

Substance use and misuse (SU&M) are regularly noted in different professions where one's achievement is dependent on physical capacities and performance (e.g., dancers and athletes). (Auge and Auge, 1999; McDuff and Baron, 2005; Miller et al., 2005; Peters, Jr., et al., 2005).

Recent studies found that very few professional sports can compare with ballet in terms of the demand placed on the body as well as on the mind (Smith, Ptacek, and Patterson,

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2000). In a culture that advocates excellence, today's ballet dancers not only are committed to achieving technical precision, but must also conform physically to established societal standards of aesthetics (Haight, 1998). When attempting to meet such expectations of having and maintaining a lean and elegant body figure, dancers tend to use extreme methods to diet (e.g., smoking tobacco, appetite suppressant, diuretic, and laxative usage) and often struggle with eating disorders (Parnianpour, Davoodi, Forman, and Rose, 1994; Robson, 2001). Responding to the high physical demands, they are also committed to making their movements look effortless when performing and creating beautiful illusions in doing so. Given that the body in ballet is the main medium of expression, dancers often face the difficult challenge of optimizing their performance by performance enhancers (sometimes referred to as performance enablers) (Guidetti et al., 2008, Hamilton, 2008; Koutedakis, 2000).

Two specific problems have to be recognized regarding ballet when it is compared with sports.

- First, there is no formal supervision of SU&M in ballet, which exists in contemporary sports and is regularly offered by coaches and/or medical support.
- Second, an anti"doping" policy in ballet practically does not exist.

Evidently, ballet has to be observed as being a highly generative base for SU&M. Whereas a range of different social, demographic, educational, and/or sports factors are frequently studied in strategies of prevention and control of sports-related SU&M (Backhouse, Mc Kenna, Robinson, and Atkin, 2007), we found no data of such kind for ballet.

This pilot study was designed to study the following: (1) SU&M and (2) selected social, cultural, educational, and training-related factors potentially related to such behavior, separately in female and male ballet dancers.

Materials and Methods

The professional Croatian National Theatre ballet troop from Split–Croatia, involving 16 female and 9 male ballet dancers, was studied.. The general characteristics of the respondents are presented in Table 1.

In investigating SU&M and the corresponding social, demographical, educational, and professional factors, we used our original questionnaire for studying substance use (QSU). The QSU was originally constructed and validated in order to be culturally specific, easily understood, and applicable as a diagnostic tool for studying SU&M in different highly physically engaged samples (athletes and comparable subjects such as ballet dancers) on the territory of former Yugoslavia (see Rodek, Sekulic, and Pasalic, 2009; Sekulic, Kostic, and Miletic, 2008; Sekulic, Kostic, Rodek, Damjanovic, and Ostojic, 2009 for details). Using the QSU, we analyzed two sets of variables. The first set consisted of the socio-demographic, educational, cultural, and sport factors that may be related to SU&M. The second set consisted of criteria questions about the subjects' SU&M (consumption and habits with alcohol, cigarettes, drugs, nutritional supplements, analgesics, and "doping") as well as about some factors directly related to SU&M (e.g., recommendations, beliefs, potential use, etc.). In a somewhat shortened version, the QSU is presented in Tables 1–3. Special attention was given to ensure the anonymity of the subjects, and therefore, no personal data were asked (e.g., exact age, place of birth, etc.), while testing was performed in a group of at least seven persons. One of the authors explained the purpose and protocol of the study, and the subjects gave their informed consent. Initially, the frequency tables, including counts and proportions of each variable, were constructed separately for

Table 1
General characteristics of the ballet dancers

	Females		Males	
	N	Percentage	*N*	Percentage
Age (years)				
19–22 (1)	2	13	0	0
22–25 (2)	5	31	1	11
25–28 (3)	1	6	2	22
>28 (4)	8	50	6	67
Religiousness				
Christian—regular Church attendance (3)	4	25	1	11
Christian—no/rare Church attendance (2)	4	25	2	22
Nonreligious (1)	8	50	6	67
Marriage				
Single (1)	12	75	5	56
Divorced (2)	1	6	1	11
Married (2)	3	19	3	33
Education level				
High school (1)	6	38	5	56
College student (2)	3	19	1	11
Undergraduated/Graduated (3)	7	44	3	33
Ballet involvement				
Less than 5 years (1)	1	6	0	0
5–9 years (2)	3	19	1	11
10–14 years (3)	3	19	0	0
15 years and above (4)	9	56	8	89

Note: Numbers in parentheses present ordinal values of each answer.

female and male dancers. The chi-square test and the Mann–Whitney test were used to compare proportions and results between characteristic groups. To establish the relationships between the ordinal variables, correlation analyses were performed using Spearman's rank correlations (Table 4). The statistical level of significance of 95% ($p < .05$) was applied.

Results and Discussion

Of all results presented in Tables, we considered several findings as bring most important and, in the following paragraphs, we will particularly discuss alcohol consumption, cigarette smoking, and "doping" behavior in professional ballet.

Evidently, more than one third of the male dancers we sampled have to be considered as serious alcohol consumers (Table 2). Alcohol drinking is already recognized as a way of dealing with a specific sport stress (see, for example, Bray, Martin, and Widmeyer, 2000; O'Brien, Ali, Cotter, O'Shea, and Stannard, 2007), and there is probably no difference between ballet dancers and athletes (Hamilton and Hamilton, 1991; Sekulic, Kostic,

Table 2
SU&M data of the ballet dancers

	Females		Males	
	N	Percentage	*N*	Percentage
Binge alcohol drinking (being drunk)[a]				
Never (1)	3	19	0	0
Rarely (2)	3	19	1	11
Once a month (3)	6	38	1	11
Once a week (4)	0	0	1	11
2–3 times a week (5)	3	19	2	22
Almost every day—regularly (6)	1	6	4	44
Cigarette smoking[a]				
I don't smoke (1)	8	50	4	55
Quit smoking (2)	1	6	1	23
From time to time (3)	1	6	1	5
Less than 10 per day (4)	3	19	1	5
>20 per day (5)	2	13	1	11
>40 per day (6)	1	6	1	0
Drugs (opiates)				
Never (1)	14	88	6	67
Cannabis and hashish—rarely (2)	2	13	1	11
Cocaine—rarely (2)	0	0	2	22
Nutritional supplements				
I don't use nutritional supplements	4	25	3	33
Isotonics	10	63	3	33
Carbohydrates and recovery supplements	2	13	3	33
Nutritional supplementation was suggested by				
Physician	3	19	1	11
Colleagues	1	6	2	22
Personal	8	50	2	22
Pain killers				
Never (1)	2	13	2	22
Rarely (2)	9	56	5	56
Often (3)	3	19	1	11
Regularly (4)	2	13	1	11
Appetite suppressants				
Yes (2)	3	19	0	0
No (1)	13	81	9	100

[a]Significant differences between sexes by means of Chi-square test.
Note: Numbers in parentheses present ordinal values of each answer

and Miletic, 2008). Why there is serious alcohol drinking found in male ballet dancers exclusively we can partly hypothesize. Anyone familiar with ballet must recognize that a ballerina's performance is highly dependent on the performance and achievement of their male colleagues. It is probably an additional stress to male dancers, since they are well aware of the fact that they are not only responsible for their own role but also for their

Table 3
Doping factors of the ballet dancers

	Females		Males	
	N	Percentage	*N*	Percentage
Doping likelihood (I'll use doping if)				
It will assure sport success (3)	4	25	2	22
sport success + non health hazard (2)	2	13	3	33
Never (1)	10	63	4	44
Doping in ballet				
I don't think there is doping in ballet (1)	3	19	1	11
Don't know—not sure (2)	8	50	3	33
Used rarely (3)	3	19	2	22
Used often (4)	2	13	2	22
Regarding doping issues I trust				
Physician	2	13	2	22
No one	14	88	7	78

Note: Numbers in parentheses present ordinal values of each answer.

female peers'. The positive correlation between ballet experience and alcohol consumption in males (Table 4) gives a support to our consideration regarding specific stress among male dancers. Briefly, choreographers and directors regularly put special emphasis on the more experienced and technically advanced dancers, who are consequently additionally stressed. In the study of Sekulic, Kostic, and Miletic (2008), similar findings were observed in sport dancers—alcohol consumption occurred more often in the successful and experienced ones.

The frequency of cigarette smoking we found herein (Table 2) was even higher than those previously found among sport dancers of similar age (Sekulic, Kostic, and Miletic, 2008; 10%) and younger ballet dancers (Parnianpour et al., 1994; 22%). This was similar though to smoking incidence found in a study by Oreb et al. (2006) (>40%). Next, frequent smoking was more evident in females than in males. Although not directly explored in this study, we are of the opinion that it probably is related to the fact that ballerinas are more aware of their body weight than their male colleagues, and as a result, smoke tobacco in order to increase their basal metabolism (Parnianpour et al., 1994). It also probably explains the serious alcohol consumption found exclusively in male dancers (see previous discussion). Briefly, alcohol consumption increases total daily energy income, given that the caloric equivalent of 1 g of alcohol is 7 kcal (McCormack Brown, Thomas, and Kotecki, 2002). Thus, regular consumption of appetite suppressants in each fifth ballerina is another logical consequence of the body weight management in this population.

The World Anti Doping Agency (WADA) has put special emphasis on prevention and educational programs in sports globally (Backhouse et al., 2007). But, as stated in the introduction, given that ballet is not formally recognized as being a sport, it is therefore not under the WADA jurisdiction and regulations. Although none of the subjects declared themselves as "dope" users, approximately one third of the subjects believed that "dope" is used in ballet, while one in four will use "dope" if it will assure improvement in their performance, regardless of the negative health consequences. It is hard to deny that an

Table 4
Correlations between social, education and specific ballet factors, and SU&M criteria

	Binge drinking	Cigarettes	Drugs	Analgesics	Appetite suppressants	Doping in ballet	Doping likelihood
Females ($N = 18$)							
Age	−0.17	−0.39	−0.47	−0.26	−0.11	−0.36	0.04
Religiousness	0.14	0.23	0.33	−0.30	0.10	−0.59[a]	−0.67[a]
Marital status	−0.23	0.23	0.30	0.33	0.50[a]	0.04	0.13
Education level	−0.38	−0.67[a]	−0.24	0.40	0.32	−0.01	0.57[a]
Ballet involvement	0.10	−0.14	0.32	0.48	0.40	0.12	0.30
Males ($N = 9$)							
Age	0.26	0.33	0.48	0.42	—	0.71[a]	0.71[a]
Religiousness	−0.35	−0.27	−0.26	0.00	—	−0.40	0.00
Mairital status	0.15	0.51	0.07	0.04	—	0.29	0.25
Education level	0.02	0.44	−0.04	−0.21	—	−0.47	0.24
Ballet involvement	0.72[a]	0.36	0.25	0.00	—	0.26	0.36

[a]Significant correlation.

Note: Age refers to the four categories of subjects' age; religiousness, religiosity of the subjects; education level, level of education; ballet involvement, time of the involvement in ballet; binge drinking, binge alcohol consumption; cigarettes, cigarette smoking; drugs, consumption of opiates; analgesics, use of analgesics; appetite suppressants, consumption of the appetite suppressants, doping in ballet, subject's opinion about the incidence of doping in ballet; doping likelihood, possibility of the subject's doping use.

additional problem is the kind of medical support in ballet, which is relatively unorganized and not systematic; general medical supervision (e.g., systematic medical checks and exams) practically does not exist. More precisely, ballet dancers are medically supervised once a year, mostly throughout the elementary occupational medical checks, and not as highly physically engaged subjects. Consequently, only a small percentage, 12% females and 22% males, will rely on physician's expertise and opinion regarding "doping" issues. It is interesting that correlation analysis revealed potential protective effects of religiosity against the use of "dope" (Table 4), which is already found in sport (Rodek et al., 2009; Sekulic, Kostic, Rodek, Damjanovic, and Ostojic, 2009), but we are of the opinion that this dependence must not be simplified. Briefly, apart from a significant negative relation between religiosity and potential "doping" behavior, the statistical analysis revealed a negative correlation between religiosity and belief that "doping" occurs in ballet.

Study's Limitations

The generalizability limitations of this study (sample size and description) does not permit conclusions to be drawn neither about the relationship between religiosity and "doping" nor about education level among religiosity and "doping" among ballet dancers. Future investigation is necessary for exploring such potential relationships.

Conclusions

On the basis of these results, we can make the following conclusions.

- Binge alcohol drinking is more commonly observed among professional Croatian male ballet dancers, while cigarette smoking is more prevalent among female dancers. Consumption of both of these licit psychoactive substances should be considered as being a way of dealing with the characteristic stress that is experienced by ballet professionals and as a result of the absence of an ongoing available and accessible medical and/or psychological service that could offer them professional support.
- In ballet, authorities should pay particular attention about SU&M among older males and married female ballet dancers. Older male dancers are more prone to alcohol consumption, whereas married ballerinas are more often predisposed to use appetite suppressants than their nonmarried peers.
- A significant "protective effect" of religiosity against SU&M is posited from these data paralleled by the more religious ballet dancers tending to deny the existence of "doping" behaviors in ballet. Therefore, we suggest that, in follow-up studies, religiosity should be studied as a factor potentially related to SU&M more specifically and precisely, while statistically controlling all relevant variables (e.g., overall, intrinsic and extrinsic religiosity, age, social factors, ethnicity, education level, etc.).
- Although aware of the main limitations of our study (relatively small sample, no data regarding past medical problems, current training status, etc.) and it's limited generalizability, we hope that data presented and discussed herein will stimulate further needed research in this area.

Declaration of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this paper.

RÉSUMÉ

Le "dopage" et la danse: L'utilisation et l'abus de substances chez les danseurs de ballet professionnels

Cette étude a examiné l'utilisation de substances et l'utilisation abusive auprès de 16 femmes et neuf hommes danseurs de ballet professionnels croates en 2008 au moyen d'un questionnaire original. Nous avons analysé les facteurs sociaux, personnels, et ceux liés à la formation, ainsi que les facteurs d'éducation, et les critères suivants: la beuverie expresse, le tabagisme, la suppression de l'appétit, l'utilisation des analgésiques, et les habitudes actuelles et potentielles de dopage. Des grilles de fréquences et le classement de corrélation ont été calculés. Plus d'un tiers des danseurs ont rapporté beuveries expresses, tandis que 20% des femmes fumaient plus d'un paquet de cigarettes par jour. Près de 25% de ces danseurs utiliseront le dopage s'il assure le ballet réussi, indépendamment des conséquences négatives sur la santé. Chez les hommes le risque du comportement relatif au dopage augmente avec l'âge. Chez des femmes le niveau d'éducation est négativement lié à l'usage de la cigarette, mais une corrélation a été positive pour les habitudes et les comportements du dopage potentiel. Dans les deux sexes, la religiosité est le facteur négatif lié à (1) le comportement du dopage potentiel et à (2) la conviction que le dopage existe dans le ballet professionnel. Les résultats suggèrent que la nécessité des plus grands services médicaux et/ou psychologique est évidente dans le ballet professionnel.

RESUMEN

"Dopaje" y Baile: Uso y abuso de sustancias entre los bailarines profesionales de ballet

Este estudio investigó uso y abuso de sustancias entre profesionales de ballet croatas (16 mujeres y nueve hombres en el año 2008) mediante un cuestionario original. Se analizaron los factores sociales, personales, aquellos relacionados con la actividad y capacitación, la educación, asimismo como los criterios: uso excesivo de alcohol (en forma de borracheras), el fumar de cigarrillos, consumo de supresores de apetito, uso de analgésicos también como hábitos reales y potenciales del dopaje. Se calcularon las tablas de frecuencia y la correlación del rango y la orden. Más de un tercio de los hombres bailarines declararon las borracheras mientras que el 20% de las mujeres fumaban más de una caja de cigarrillos por día. Casi el 25% de estos bailarines consumará el dopaje si les garantizará el éxito en la actuación de ballet, independientemente de las negativas consecuencias para la salud. En caso de los hombres el riesgo del dopaje, como comportamiento potencial, aumenta con la edad. En caso de las mujeres el nivel de educación resultó negativamente relacionado con el fumar de cigarrillos, pero positivamente correlacionado con los potenciales hábitos del dopaje y el comportamiento. El factor de la religiosidad, en caso de ambos sexos, fue negativamente relacionado con (1) comportamiento potencial del dopaje (2) creencia que el dopaje existe en el ballet profesional. Los resultados sugieren que existe una evidente necesidad de los más específicos servicios médicos y/o psicológicos en ballet profesional.

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Glossary

Binge drinking: defined as drinking alcoholic beverages with the primary intention of becoming intoxicated by "heavy consumption" of alcohol over a short period of time

Doping: Occurrence of one or more antidoping code violations, mostly observable by use of prohibited substances and the consequent presence of the prohibited substance and/or their metabolites or markers in the athletes' specimens.

Physical fitness: Defined as the body's ability to function efficiently and effectively in physically demanding work and leisure activities.

Religiosity: Comprehensive sociological term used to refer to the numerous aspects of religious activity, dedication, and belief (religious doctrine).

WADA: The World Anti-Doping Agency (WADA) is the international independent organization created in 1999 to promote, coordinate, and monitor the fight against doping in sport in all its forms.

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