The Prison Journal
2017, Vol. 97(2) 181–201

DOI: 10.1177/0032885517692795
journals.sagepub.com/home/tpj
SAGE

Understanding the Barriers to Prisoners' Participation in Sport Activities

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Abstract

This study investigates the barriers and the predictors of these barriers that impede prisoners' participation in sport activities. Data are derived from a project in a remand prison in Belgium (N = 486). Findings indicate that prisoners have strong preferences for other activities (e.g., work, visiting), as well as experiencing institutional barriers to sport activity. Findings show that age and time served, in particular, have an influence on the experience of the different types of barriers. Based on the research findings, the article concludes by discussing paths for further research and implications for policy and practice.

Keywords

sports, prisoners', participation, barriers, ecological model

Introduction

Throughout the world, more than 10.36 million people are held in correctional institutions (Coyle, Fair, Jacobson & Walmsley, 2016). Several international

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regulations articulate that these people may not be excluded from the normal services provided to society. Notwithstanding the fact that each country and prison system has its own laws and regulations, the Standard Minimum Rules for the Treatment of Prisoners (United Nations, 1955) and The European Prison Rules (Committee of Ministers, 2006) stipulate the right for prisoners to have access to sport activities. In Belgium and Denmark, sport has mainly a recreational role, while in other countries (e.g., Spain, Romania) it is considered a form of education (Devís-Devís, Peirró-Veler, & Martos-García, 2012).

International research on sports in correctional institutions is rather scarce and has focused predominantly on the benefits of participation (Meek, 2014). First, doing exercise improves physical health (Gallant, Sherry, & Nicholson, 2015; Nelson, Specian, Tracy, & DeMello, 2006; Vaiciulis, Kavaliauskas, & Radisauskas, 2011) and psychological functioning (Cooper & Berwick, 2001; Martos-García, Devís-Devís, & Sparkes, 2009). Second, exercise helps to alleviate stress, depression, and anxiety (Buckaloo, Krug, & Nelson, 2009; Gallant et al., 2015; Verdot, Champely, Clément, & Massarelli, 2010); decreases feelings of hopelessness (Cashin, Potter, & Butler, 2008); and results in fewer complaints of insomnia (Elger, 2009). Performing sports activities can thus be seen as a coping mechanism to combat mental and emotional distress (Buckaloo et al., 2009; Meek & Lewis, 2014b) and, consequently, as a way to improve confidence and self-esteem (Ozano, 2008). Third, participation in sports improves social order within a prison. Inmates who take part in sport activities are less likely to cause trouble or to get involved in conflicts (Martos-García et al., 2009; Meek & Lewis, 2014a).

Given the multiple benefits of prison-based sport activity, it is important to identify factors that might lead to greater participation. In comparison with the extensive international literature on the benefits of participation, there are few studies which focus on inmate motivation for sports activity by examining the factors which motivate them. Exercise provides a means for prisoner distraction, relaxation, relief from boredom, and energy release (Condon, Hek, & Harris, 2008; Digennaro, 2010; Frey & Delaney, 1996; Martos-García et al., 2009). Taking part in prison sport activities is viewed as pass time for getting through the day (Martos-García et al., 2009; Sabo, 2001). For some prisoners, it offers an alternative to substance abuse (Martos-García et al., 2009) or the opportunity to form social bonds with other inmates (Condon et al., 2008).

Studying the motivating factors for prisoner sports participation also involves studying the barriers that impede their participation. A literature review by Brosens (2013) found studies on barriers to sports activities' participation in prison fragmented and almost nonexistent. Furthermore, Johnsen (2001) suggests that prisoners who do not do sports should more often be included in research and given a voice.

Consequently, the aim of the present study is to gain an insight into the barriers that impede prisoners' participation in sport activities and into the predictors of the experience of these barriers. Given the scarcity of relevant research, this article begins with a review of the literature on community barriers to sports participation that individuals experience in these settings.

Barriers to Participation in Sport Activities Within Community Settings

There are different means to classify the barriers to participation in sport activities. The most traditional one is dividing barriers which are internal and external to an individual (e.g., Chinn, White, Harland, Drinkwater, & Raybould, 1999; Daskapan, Tuzun, & Eker, 2006; Gomez-Lopez, Granero Gallegos, & Baena Extremera, 2010). Internal barriers are, for example, a lack of energy, lack of motivation and lack of self-efficiency. Lack of resources, lack of social support and lack of access to transport are examples of external barriers (e.g., Chinn et al., 1999; Daskapan et al., 2006). Another useful model to categorize the barriers to participation in sport activities is Bronfenbrenner's ecological model (Brosens, 2013; Gyurcsik, Spink, Bray, Chad, & Kwan, 2006). Bronfenbrenner (1979) states that behavior is affected by one's environment. Several ecological systems are considered to have an effect upon that behavior—more specifically, the micro, meso, exo, and macro systems. The microsystem refers to an individual's immediate surroundings. The mesosystem includes the social interactions that take place in the immediate environment (e.g., family, friends, school, neighborhood). The exosystem goes beyond the individual's environment and emphasizes the role of organizations in affecting behavior. Finally, the macrosystem is about the broader influences of culture, policy, values, norms, and so on.

McLeroy, Bibeau, Steckler, and Glanz (1988) adopt the ecological model of Bronfenbrenner to explain health behavior and transform the different ecological systems into five kinds of factors that determine behavior: intrapersonal factors (micro), interpersonal factors (meso), institutional factors (exo), and community factors and public policy (macro). Intrapersonal factors are associated with individual characteristics and include psychological and biological variables, like having a negative attitude toward sports. Interpersonal factors are related to (in)formal social networks and support systems, for example, a lack of support from significant others. Institutional factors are associated with the organization. Having no sufficient access to sports activities can be considered an institutional barrier. Community factors include the relationships between institutions, organizations, and social networks within defined boundaries (e.g., a municipality), and public policy concerns related

to local, state, national, and supranational laws and policies (Gyurcsik et al., 2006; McLeroy et al., 1988; Sallis, Bauman, & Pratt, 1998). According to Gyurcsik et al. (2006), the traditional classification of barriers as internal or external to an individual can be included in the ecological model. Internal barriers can be considered as intrapersonal; external barriers refer to the other four categories.

Barriers to Participation in Sport Programs in Prison

There are only a limited number of scholars who focus explicitly on prisoner perceived barriers to participation in sport activities. For instance, Meek (2014) and Meek and Lewis (2014b) investigate the barriers among female prisoners. While they divided the barriers into those internal and external to an individual, we use a broader ecological model (i.e., intrapersonal, institutional, situational, etc.) to present their findings. The most commonly identified reasons for female prisoner nonparticipation are a lack of interest (intrapersonal), no activities available in which they want to take part (institutional) or physical health issues (intrapersonal). Other reasons are having negative attitudes toward sports (intrapersonal), considering these activities as a form of punishment (intrapersonal), or being unaware of the activities offered (informational). Furthermore, the following practical barriers (institutional) are reported: insufficient time, no timely release from cells for participation, banishment from participation (e.g., being temporarily segregated), and scheduling of activities at the same time (Meek, 2014; Meek & Lewis, 2014b). Other researchers do not explicitly focus on hindrances, but implicitly mention some barriers for older prisoners. For example, some older prisoners do not take part in sports because they do not want to compete with their younger fellow inmates (interpersonal; Leigey, 2007), or are refused access because they are not considered to be sufficiently fit (institutional; Condon et al., 2008).

Limited research offers variables that have an influence on the sport participation of prisoners. For instance, participation rates differ according to prisoners' age and gender. Younger prisoners are more likely to take part in sports (Lewis & Meek, 2012); male prisoners as well compared with their female counterparts (Meek, 2014). Participation rates are higher among female prisoners who have been in prison before and work inside. However, ethnicity and time served are not related to participation (Meek, 2014). Having insight into the profile of sport participants is one aspect. However, research on the factors that influence the experience of barriers that hinder prisoners' participation in sport activities is scarce.

Aim

The objective of this present study is to investigate the barriers that impede prisoners' participation in sport activities and to examine whether individual or prison-related characteristics have an influence on how different types of barriers are experienced. The barriers are classified using an ecological framework (e.g., Bronfenbrenner, 1979; Gyurcsik et al., 2006; McLeroy et al., 1988). The following research questions are addressed:

Research Question 1: What barriers to participation in sport activities do prisoners experience?
Research Question 2: What are the individual and prison-related predictors connected to the different types of barriers?

Method

Sample

Participants in this study were prisoners confined in a remand prison in Belgium for men and women. The goal was to include the entire prison population ($N = 677$). However, not all prisoners were available for the research project (e.g., being temporarily segregated, hospitalized, having the status of semi-liberty; $n = 20$). Therefore, 486 prisoners volunteered to participate, achieving a final response rate of 73.97%. Some respondents failed to answer some questions, which resulted in having a slightly different number of respondents for the different variables reported below.

Data Collection

This study is a part of a larger research project on participation in six kinds of prison programs (i.e., sport activities, educational courses, socio-cultural activities, library, vocational training, and mental health services). Data were gathered in October 2012 using a structured questionnaire that was available in 13 languages (Albanian, Arabic, Dutch, English, Farsi, French, German, Italian, Polish, Romanian, Russian, Spanish, and Turkish). The questionnaires were administered in classrooms within the correctional institution, and more than 20 volunteers assisted with the data collection. The volunteers were activity organizers or members of the university. Some of them were present in the classroom to answer questions from the participants and to offer help to prisoners with writing and reading difficulties. From the beginning, potential participants were assured that participation was voluntary and that they could withdraw at any point without an explanation. The Ethical Committee of the University granted approval for the study.

Measures

Dependent variables. To gain an insight into the barriers that impede prisoners' participation in sport activities, we asked the nonparticipants the following question: "Why did you not take part in any sports in the past month? Please check the appropriate answer(s)." Respondents were shown a list of 23 different reasons for nonengagement. Afterwards, we grouped these barriers into one of the five different categories of the ecological model: intrapersonal (micro), having other preferences (micro), interpersonal (meso), institutional (exo), and informational (exo). Each category was formed into a dichotomous variable (0 = not experiencing this kind of barrier, 1 = experiencing this kind of barrier).

Independent variables. Individual characteristics and prison-related characteristics were utilized as independent variables. The individual characteristics included gender (0 = *male*, 1 = *female*), age (continuous), nationality (1 = *Belgian*, 2 = *other European nationality*, 3 = *non-European nationality*), education (i.e., numbers of school years attended without kindergarten [continuous]), understanding of the Dutch language (1 = *very good*, 2 = *a little bit*, 3 = *not at all*), and current mental health status. Information about the current mental health status was obtained by using the General Health Questionnaire (GHQ-12). An exploratory factor analysis, using varimax rotation, identified a two-factor solution of *anxiety and depression* (Chronbach's $\alpha = .855$) and *social dysfunctioning* (Chronbach's $\alpha = .747$). A higher score on a scale indicated higher levels of anxiety and depression or social dysfunctioning.

In addition, five prison-related variables were used: doing prison work (0 = *no*, 1 = *yes*), length of confinement (to date; continuous), whether someone was a first-time inmate (0 = *yes*, 1 = *no*), status (1 = *accused*, 2 = *convicted*, 3 = *don't know*), and expected time of release (1 = *in less than 6 months*, 2 = *in more than 6 months*, 3 = *I don't know*).

Data Analysis

First, bivariate analyses were used to make comparisons between participants and nonparticipants in sport activities. The analyses consisted of chi-square tests for categorical variables and *t* tests for continuous variables. In the research phase which followed, only the nonparticipants were included. Again, bivariate analyses (χ^2 tests and *t* tests) were performed to gain an insight into the differences in the barriers experienced. As indicated by Tewksbury and Mustaine (2008), although bivariate analyses can provide a description of the variables that are associated with a certain dependent variable, to better assess the predictors,

multivariate analyses need to be performed. Variables that were significantly related with at least one kind of barrier at a level of $p < .05$ in the bivariate analyses were included in the binary logistic regression analyses, the last phase of analysis. Given the dichotomous nature of the dependent variables, binary logistic regression analyses were chosen as the appropriate technique. All data were analyzed using SPSS 22.0.

Results

Sample Characteristics

Table 1 presents percentages and means of participating and nonparticipating prisoners in sport activities. Participants are younger ($M = 30.76$ vs. 34.22), have better social functioning inside prison ($M = 55.70$ vs. 62.61), are more often at work inside the institution ($\chi^2 = 7.533$, 1 *df*), and are more informed about their penal situation (status; $\chi^2 = 8.226$, *3 df*) compared with nonparticipants. Participants and nonparticipants of sport activities do not differ in terms of gender, ethnicity, school attainment, understanding of the Dutch language, feelings of anxiety and depression, status as a first-time inmate or not, and expected time of release.

Barriers to Exercise Among Prisoners

Of the respondents, 40.5% had done sports outside their cell in the past month. Among the 59.5% who did not do any sport, a variety of barriers was experienced. Table 2 presents an overview of the barriers that impede prisoners' participation in sport activities. Almost half of the prisoners (44.5%) who did not participate in sport activities had preferences for other activities. Preferring work (23.2%), meeting visitors (19.6%), and going outside for fresh air (15.8%) were the most cited preference barriers. Moreover, these three barriers were also the most important reasons for prisoners to not take part in sports. Almost one third of the nonparticipants (30.1%) reported institutional barriers. Having received no answer to their report note (i.e., request to register; 14.7%) and being on waiting lists (12.5%) were the most frequently cited factors. In addition, 21.3% experienced intrapersonal hindrances (e.g., I do not feel like it—13.2%). Interpersonal and informational hindrances were less cited. About 19% of the prisons who did not practice sports experienced these kinds of barriers. Concerning interpersonal barriers, the most decisive barriers were "not wanting to get into a fight" (9.2%) or "not wanting to be a burden for the prison guards" (8.1%). Likewise, 11.8% "did not know how to sign up" and 10.7% was "not aware of the possibility to take part in sports."

Table 1. Bivariate Comparisons of Participants and Nonparticipants in Sport Activities.

	Participants (n = 190)			Nonparticipants (n = 279)		
Variable	%	*M*	*SD*	%	*M*	*SD*
Individual characteristics						
Age		30.76**	9.83		34.22**	10.48
Gender						
Male	39.8			60.2		
Female	46.3			53.7		
Ethnicity						
Belgian	36.7			63.3		
Other European	46.1			53.9		
Non-European	42.4			57.6		
Numbers of school years		10.17	3.79		10.36	4.07
Understanding of Dutch		1.71	0.81		1.71	0.80
Current mental health						
Depression and anxiety		29.53	24.29		33.44	23.71
Social dysfunctioning		55.70**	23.34		62.61**	20.99
Prison-related characteristics						
Doing prison work						
Yes	53.4**			46.6**		
No	38.1**			61.9**		
Length of confinement		5.01**	1.81		4.10**	1.85
First-time inmate						
Yes	39.8			60.2		
No	43.5			56.5		
Status						
Accused	47.8**			52.2**		
Convicted	40.6**			59.4**		
Do not know	30.4**			69.6**		
Expected time of release						
< 6 months	38.1			61.9		
> 6 months	27.6			72.4		
Don't know	42.3			57.7		
Total	40.5			59.5		

*p < .10. **p < .05.

Bivariate Analyses

As noted above, 59.5% of the respondents did not take part in sports during the past month. These respondents could indicate five different kinds of

Table 2. Overview of Barriers to Participation in Sport Indicated by Nonparticipants (n = 272).

Barriers	%
Preferences (micro)	
I prefer to work	23.2
I prefer to see my visitors	16.9
I prefer to go outside for fresh air	15.8
I prefer to do something else	9.6
I prefer to attend my religious service	7.7
Subtotal	44.5
Institutional (exo)	
I wrote a report note but I never received an answer	14.7
I wanted to, but the sport activities were full	12.5
I'm not allowed to take a shower after playing sports	4.8
The sport activities are not interesting	3.3
There were no sport activities outside my cell	2.9
I can't play sports at the moment, because I've been suspended	0.4
Subtotal	30.1
Intrapersonal (micro)	
I don't feel like it	13.2
I don't like sports	5.1
I'm too tired to play sports	4.0
I'm not fit enough because I'm overweight	2.9
Subtotal	21.3
Interpersonal (meso)	
I don't want to get into a fight	9.2
I don't want to be a burden for the supervisors	8.1
I don't like the atmosphere	4.8
I don't like to play sports in a group	2.9
Other inmates bully or threaten me	1.8
I've heard some bad things about the sport coaches	1.5
Subtotal	18.8
Informational (exo)	
I don't know how to sign up	11.8
I wasn't aware of the possibility to take part in sports	10.7
Subtotal	18.8

*$p < .10$. **$p < .05$.

barriers to participation. Tables 3 and 4 summarize, respectively, the results of the chi-square tests and independent t tests to examine whether there was a difference in the barriers experienced based on various features. Different variables were associated with experiencing barriers.

Table 3. Bivariate Analyses (χ^2) on the Barriers That Hinder Prisoners' Participation in Sport Activities.

	Micro				Meso		Exo			
	Intrapersonal		Preferences		Interpersonal		Institutional		Informational	
Variables	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Gender										
Male	48	19.6**	104	42.4**	44	18.0	75	30.6	44	18.0
Female	10	37.0**	17	63.0**	7	25.9	7	25.9	7	25.9
Nationality										
Belgian	28	25.7	52	47.7*	18	16.5	27	24.8	13	11.9**
European	12	17.4	36	52.2*	13	18.8	23	33.3	17	24.6**
Non-European	14	18.2	27	35.1*	16	20.8	26	33.8	20	26.0**
Working inside										
Yes	12	25.0	32	66.7**	6	12.5	10	20.8	3	6.3**
No	39	20.2	69	35.8**	35	18.1	62	32.1	39	20.2**
Status										
Accused	16	17.4	32	34.8	17	18.5	29	31.5	17	18.5
Convicted	13	21.7	23	38.3	10	16.7	19	31.7	12	20.0
Don't know	13	20.3	31	48.4	9	14.1	15	23.4	11	17.2
First-time inmate										
Yes	26	18.8	61	44.2	17	12.3**	42	30.4	28	20.3
No	25	22.1	46	40.7	26	23.0**	31	27.4	17	15.0
Expected time of release										
< 6 months	19	27.5	30	43.5	13	18.8	20	29.0	10	14,5
> 6 months	5	25.0	12	60.0	3	15.0	8	40.0	1	5.0
Don't know	9	16.4	24	43.6	9	16.4	13	23.6	14	25.5

*$p < .10$. **$p < .05$.

First, women and prisoners who were already in prison for a longer period of time were more likely to report intrapersonal barriers (respectively, $\chi^2 = 4.412$, *1 df; M* = 4.55 vs. 3.95).

Second, women ($\chi^2 = 4.144$, *1 df*), prisoners with a longer current sentence length (*M* = 4.48 vs. 3.78), prisoners who worked inside the prison ($\chi^2 = 15.091$, 1 *df*), and older prisoners (*M* = 36.21 vs. 32.49) more frequently had preferences for other activities.

Third, interpersonal barriers were more frequently expressed by prisoners with more than one prison experience ($\chi^2 = 5.001$, 1 *df*) and by those with more feelings of anxiety and depression (*M* = 46.46 vs. 30.93).

Fourth, prisoners who experienced institutional barriers were younger than prisoners who did not report these barriers (*M* = 30.86 vs. 35.56).

The last category, the informational barriers, was associated with five variables. Non-European and other European prisoners reported more

Table 4. Bivariate Analyses (*t* Test) on the Barriers That Hinder Prisoners' Participation in Sport Activities.

	Micro				Meso		Exo			
	Intrapersonal		Preferences		Interpersonal		Institutional		Informational	
Variables (*M*)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Age	33.32	34.38	36.21**	32.49**	36.48*	33.63*	30.86**	35.56**	34.43	34.09
Numbers of school years	10.55	10.37	9.98	10.75	9.67	10.57	9.84	10.65	9.55*	10.60*
Understanding of Dutch	1.59	1.74	1.81	1.71	1.72	1.71	1.73	1.70	2.10**	1.62**
Length of confinement	4.55**	3.95**	4.48**	3.78**	3.65*	4.17*	4.11	4.06	3.40**	4.22**
Anxiety and depression	33.64	32.96	30.56	34.72	46.46**	30.93**	38.13*	30.67*	50.50**	30.26**
Social dysfunctioning	60.94	62.98	61.84	63.01	68.89	61.24	66.20	60.78	72.67**	60.48**

*$p < .10$. **$p < .05$.

informational barriers compared with Belgian prisoners ($\chi^2 = 7.167$, 2 *df*). Informational barriers were also experienced more by prisoners with a poorer language understanding ($M = 2.10$ vs. 1.62) and by prisoners who did not work inside ($\chi^2 = 5.204$, 1 *df*). Experiencing informational barriers decreased over time ($M = 3.40$ vs. 4.22). Finally, prisoners with a higher score on the social dysfunctioning scale expressed more informational barriers ($M = 72.67$ vs. 60.48).

Logistic Regression Results

After having controlled for outliers and multicollinearity, binary logistic regressions were conducted. All the variables that were at least significantly related (i.e., $p < .05$) with one category of barriers were included in the multivariate models, resulting in nine predictor variables. Expected time of release, status, and numbers of school years attended were excluded as they were never significantly related at bivariate level. In total, 124 independent cases were included in the regression models, which meets the suggestion of having 10 events per variable (EPV) to obtain reliable regression coefficients (EPV: 124/9 = 13.78; Hosmer, Lemeshow, & Sturdivant, 2013; Peduzzi, Concato, Kemper, Holdford, & Feinstein, 1996). The results are presented in Tables 5 (micro barriers), 6 (meso barriers), and 7 (exo barriers). Pseudo R^2 was calculated to test how much of the variance is explained by the model.

Table 5. Logistic Regression: Predictors of Experiencing Barriers at Micro-Level (n = 124).

	Model 1: Intrapersonal barriers			Model 2: Preference barriers		
	β	*SE*	*Exp*(β)	β	*SE*	*Exp*(β)
Age	−0.015	0.022	0.985	0.030	0.021	1.031
Gender (ref = men)	0.582	0.639	1.790	1.058	0.650	2.879
Nationality						
Belgian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
European	−0.625	0.700	0.535	0.197	0.645	1.218
Non-European	−0.759	0.805	0.468	−1.127	0.723	0.324
Understanding of Dutch	−0.259	0.521	0.772	−0.070	0.437	0.932
Current mental health						
Anxiety and depression	0.002	0.010	1.002	0.004	0.009	1.004
Social dysfunctioning	0.002	0.012	1.002	−0.007	0.011	0.993
Length of confinement	0.361	0.144	1.435**	0.344	0.134	1.411**
Working inside	−0.904	0.660	0.405	1.143	0.579	3.137**
First-time inmate	−0.205	0.497	0.815	−0.026	0.457	0.974
Constant	−1.785	1.329	0.168	−2.738**	1.248	0.065
Cox and Snell R^2	.077			.228		
Nagelkerke R^2	.119			.308		

*p < .10. **p < .05.

The first regression model, which included intrapersonal barriers to participation in sport activities, revealed that the longer the imprisonment, the more often prisoners experienced intrapersonal barriers. Overall, the model explained 7.7% to 11.9% of the variance of intrapersonal barriers.

The second model is about having preferences for other activities as a reason for nonparticipation in sport activities. Two variables added significantly to the model. Working prisoners were 3.1 times more likely to have preferences for other activities compared with prisoners who did not work. Moreover, already having been in prison for a longer time was positively related with having other preferences than participating in sport activities. The explained variation of our model ranged from 22.8% to 30.8%.

Model 3 presents an overview of the predictors of experiencing interpersonal barriers (meso-level– table 6). Three variables emerged as significant predictors. Older prisoners, those with more feelings of anxiety and depression and more than one prison experience are more likely to face interpersonal barriers. In addition, the poorer an inmate's understanding of the Dutch

Table 6. Logistic Regression: Predictors of Experiencing Barriers at Meso-Level (n = 124).

	Model 3: Interpersonal barriers		
	β	*SE*	*Exp*(β)
Age	0.069	0.028	1.071**
Gender (ref = men)	−0.711	0.911	0.491
Nationality			
Belgian	Ref.	Ref.	Ref.
European	−0.164	0.887	0.849
Non-European	−0.321	0.868	0.725
Understanding of Dutch	1.021	0.549	2.776*
Current mental health			
Anxiety and depression	0.024	0.012	1.024**
Social dysfunctioning	0.016	0.016	1.016
Time served	−0.222	0.189	0.801
Working inside	0.920	0.831	2.508
First-time inmate	1.486	0.653	4.420**
Constant	−7.398	2.081	0.001**
Cox and Snell R^2	.168		
Nagelkerke R^2	.281		

*p < .10. **p < .05.

language, the more likely he or she is to experience interpersonal barriers. The predictors in this model explained between 16.8% and 28.1% of the variance.

Concerning the barriers at the exo-level, two regression models are presented in Table 7. One variable emerged as a significant predictor of experiencing institutional barriers (model 4). Younger prisoners were more likely to report institutional barriers that hinder their participation in sport activities. This model explained between 13.5% and 18.9% of the variance of the dependent variable.

Model 5, about the predictors of experiencing informational barriers, demonstrates that, in particular, understanding of the Dutch language was associated with this category of barriers. The poorer their understanding of the communication language, the more likely it was that informational barriers hindered their participation in sport activities. Moreover, increasing age was positively related with more informational barriers. Furthermore, the experience of informational barriers is likely to decrease when someone has been in prison for a longer time. In addition, there is a tendency for

Table 7. Logistic Regression Models: Predictors of Experiencing Barriers at Exo-Level (n = 124).

	Model 4: Institutional barriers			Model 5: Informational barriers		
	β	*SE*	*Exp*(β)	β	*SE*	*Exp*(β)
Age	−0.069	0.024	0.933**	0.085	0.036	1.089**
Gender (ref = men)	0.320	0.644	1.377	−0.120	0.981	0.887
Nationality						
Belgian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
European	0.161	0.633	1.175	−1.529	1.548	0.217
Non-European	0.810	0.638	2.249	0.380	1.096	1.462
Understanding of Dutch	−0.253	0.417	0.776	2.171	0.788	8.768**
Current mental health						
Anxiety and depression	0.008	0.009	1.008	0.031	0.016	1.032*
Social dysfunctioning	0.007	0.011	1.007	0.022	0.020	1.023
Time served	0.140	0.129	1.150	−0.583	0.261	0.558**
Working inside	−0.720	0.603	0.487	−0.395	1.515	0.673
First-time inmate	−0.417	0.452	0.659	−0.565	0.789	0.568
Constant	0.639	1.170	1.895	−8.320	2.340	0.000*
Cox and Snell R^2	.135			.280		
Nagelkerke R^2	.189			.497		

*p < .10. **p < .05.

informational barriers to be experienced more by those prisoners with greater feelings of depression and anxiety. In total, between 28.0% and 49.7% of the variance of informational barriers is explained by Model 5.

Discussion and Conclusion

The aim of this study was to use the ecological model to investigate the barriers that hinder prisoners' participation in sport activities in a remand prison in Belgium. The ecological model is applied as it offers a systematic approach for classifying the barriers, and suggesting interventions to alleviate or eliminate the barriers of a specific category.

The results indicate that not participating in sport activities is especially determined by a specific group of factors at the micro-level (i.e., having preferences for other activities) and exo-level (i.e., institutional barriers). Nevertheless, also the other categories of barriers (i.e., interpersonal—micro, intrapersonal—meso, and informational—exo) have an influence to some extent. To design interventions for increased sports activity, it is

important to consider the factors that can predict prisoners' experience of the distinct barrier categories. Although international literature has investigated the relationship between participation in sport activities in prison and different factors (e.g., age, gender, ethnicity, time of confinement; Lewis & Meek, 2012; Meek, 2014), there is no research that links these factors with experiencing the different types of barriers. The results of the logistic regression models in this study demonstrate that age and time served are decisive factors in particular. Both factors emerged as a predictor in three models of barriers. The older the prisoners are, the more often interpersonal barriers hinder their participation. Previous research has also shown that older prisoners give several social reasons to explain their nonparticipation in sport activities: "being afraid of physical fights" and "not wanting to compete with the faster and more agile younger inmates" (Leigey, 2007). Older prisoners are also more likely to be confronted with informational barriers. Providing an explanation for this is more challenging. Further research could indicate whether activity organizers are, for instance, selective in providing information, because sport activities are mostly geared toward the majority population (i.e., younger inmates; Snyder, Wormer, van Chadha, & Jaggers, 2009). Moreover, Aday (2006) states that older inmates particularly need more encouragement to become involved in this kind of activities. Younger prisoners, on the other hand, are more likely to experience institutional barriers. As younger prisoners are more likely to take part in sports, it is a realistic conclusion that they are more frequently confronted with the limited range of sport activities available. Getting no answer to their report note (i.e., the request to register for sport activities) is another institutional barrier. Further research could reveal the reasons why activity organizers do not always give an answer to the requests.

Regarding time served, prisoners who recently arrived in prison are more frequently confronted with informational barriers. It is possible that as time passes, more prisoners are aware of both the activities offered and the enrollment procedure. On the other hand, some prisoners who have been in prison for a longer period of time are also hindered in their attempts to participate, more specifically by intrapersonal barriers and having preferences for other activities. Offering an explanation for why the experience of these barriers is higher among those with a longer current sentence length is difficult. Further research could investigate this more in depth. Meek (2014) indicates that low participation rates in sport activities could be explained by the possibility that these activities clash with other regime activities (e.g., work, education). However, why having other preferences is indicated more by prisoners with a longer length of stay remains unclear.

Previous research has shown that foreign national prisoners experience different language problems during their detention (Barnoux & Wood, 2013). Language understanding (in this case understanding of the Dutch language) also seems to be an influencing factor for experiencing different kinds of barriers that hinder participation in sport activities. Informational and interpersonal barriers are more often reported by prisoners with a poor understanding of this language. In addition, these barriers are also more apparent for those prisoners with higher feelings of anxiety and depression. Although information about sport activities is available in different languages (flyers and posters), it seems that the better the language understanding, the greater the chance of getting involved. That having a poorer understanding of the Dutch language is linked with experiencing more interpersonal barriers can possibly be explained by the fact that these barriers are about social interactions with other inmates, supervisors, and sport coaches, and that some of these interactions rely on verbal communication. Giving an explanation as to why these two categories of barriers are associated with greater feelings of anxiety and depression is difficult. Additional research could provide further insights into this issue.

Finally, the factors of whether someone is a first-time inmate, and whether or not someone does prison work, are each associated with one category of barriers. Working prisoners more frequently express preferences for other activities than sport. As one of the possibilities is "preferring to work," it is a sound conclusion that these barriers are more frequently expressed by those who work inside. Finally, prisoners who have been in prison several times are more likely to face interpersonal barriers than first-time inmates. Further research into the social networks inside prison may show whether there are differences between the networks of first-time inmates and those of prisoners with more than one prison experience.

Limitations

The present study has several limitations that should be considered when reviewing and interpreting the results. First, because the study took place in one remand prison in Belgium, additional research is needed to see whether prisoners in other (remand) prisons experience the same barriers, and to determine whether there are differences in the profile of those who indicate these barriers. Furthermore, an integration of our categories of barriers and those of Meek (2014) and Meek and Lewis (2014b) is needed. Because the studies were carried out around the same period, it was impossible to build on each other's work. Consequently, not all the barriers investigated are similar. For instance, Meek notes that sometimes prisoners are not freed from their

cells in time and that prisoners do not participate in sport activities because they see it as a form of punishment. In our study, these barriers were not included, but other kinds of hindrances (e.g., interpersonal barriers) were introduced. Future research could combine the barriers from these different studies.

In addition, our sample was relatively small. It is possible that a larger sample size could explain more of the variance of the barriers. Finally, other researchers have applied the ecological framework to participation in sport activities (outside prison) and added an extra type of behavioral determinant: physical environment factors (exo). These factors concern the actual physical context in which the sport activities occur (e.g., Gyurcsik et al., 2006; Sallis et al., 1998). Unfortunately, this category was not included in our study.

Nevertheless, despite these limitations, our study provides an insight into the reasons for nonparticipation in sports, and the features that are associated with these barriers. Based on this knowledge, policy makers and activity organizers can try to anticipate these barriers and strive to make the activities available for everyone who wants to take part in sports. Because nonparticipation in sport activities is determined by factors at various ecological levels (i.e., micro-, meso- and exo-level), we discuss separately the possible interventions at each level.

First, as the exo-level stresses the role of organizations in affecting behavior (Bronfenbrenner, 1979), it seems easiest to anticipate the barriers at this level and especially the information barriers, although this is a less commonly experienced category of barriers. This kind of barrier can be overcome through innovative practices (Meek & Lewis, 2014b). For instance, it is primarily prisoners who have difficulties with the Dutch language who do not participate in sport activities because of informational hindrances. Research has shown that taking part in sports is helpful in developing language skills (Doherty & Taylor, 2007). For this reason, it could be interesting to make use of multi-channel communication (Meek & Lewis, 2014b) and focus on both written and oral communication. Written information (i.e., flyers and posters) about the sport activities can be made available in different languages. For oral communication, different social networks can play a role. Research has shown that a wide range of social networks can have an influence on the participation of prisoners in prison programs: for example, fellow inmates, activity organizers, prison guards, friends and family members outside prison (Brosens, De Donder, Vanwing, Dury, & Verté, 2014). Informational barriers are also frequently indicated by older people and prisoners who have recently arrived in prison. Special attention might be paid to these groups in disseminating information about sport activities. Another category of barriers at exo-level is the institutional barriers. Receiving no answer to a report note (i.e.,

request to register) and waiting lists are the most frequently indicated barriers within this category. As indicated previously, further research can provide insights into the reasons why activity organizers do not always respond to report notes. Possible reasons could be, for instance, the waiting lists, or not receiving the report notes from the prison guards. Eliminating the waiting list would be more difficult because of financial and infrastructural constraints.

Second, also anticipating the barriers at the micro-level seems to be possible by means of practical interventions. Intrapersonal barriers are experienced more by older prisoners. Sport activities are usually geared to the majority population (i.e., younger prisoners; Snyder et al., 2009), and sometimes older prisoners do not take part because they do not want to compete with younger inmates (Leigey, 2007). A solution might be to organize separate sport sessions for older prisoners to meet their needs. Furthermore, the most commonly occurring category of micro barriers is having preferences for other activities than sport, like going to work, receiving visitors and going outside for fresh air. People who are already for a longer time in prison in particular experience this kind of barrier. The ideal situation would be for the different activities to take place at different times, so that people who work during the day can take part in sports during the evening, for instance.

Finally, anticipating the barriers at the meso-level seems to be the most difficult, as it includes the social interactions within the prison. "I do not want to get into a fight" and "I do not want to be a burden for the prison guards" are the most frequently indicated barriers. Unfortunately, we are not able to make suggestions to anticipate the tensions between prisoners. To alleviate the feeling of being a burden for the prison guards, sensitization of the latter group about the usefulness of sport activities would be a possibility.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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