

Białystok inhabitants' preferences concerning forest recreational services – the need for physical activity

Marcin Smoleński

Institute of Forest Sciences, University of Łódź, ul. Konstytucji 3 Maja 65/67, 97–200 Tomaszów Mazowiecki, Poland

Tel. +48 44 7252905, e-mail: marcin.smolenski@o2.pl

Abstract. This paper focuses on the market segmentation of recreational forest services using the concept of 'sensation seeking' for describing recreational expectations of town dwellers. The physical activity of town dwellers from the urban agglomeration of Białystok and the Knyszyn Forest (North-Eastern Poland) during outdoor recreation was analysed using this concept. The results of this research suggest that less than thirty percent of inhabitants of the Białystok agglomeration tend to be physically active during outdoor recreation. This is evidence of a low level of physical culture within the part of the society analysed in this study. Amongst all participants, only seven percent use the Knyszyn Forest for recreational purposes based on physical activity. The limited interest in active recreation in forests that we observed can be attributed to two main causes: 1) the lack of acceptance of a closed forest landscape as a recreational area; 2) the lack of recreational facilities in the Knyszyn Forest that would encourage healthy behaviour during active outdoor recreation.

Keywords: recreation, physical activity, forest-landscape, sensation seeking, town dwellers

1. Introduction

Modern paradigm of healthy life style implies that lack of physical activity is a major cause of health problems. Even moderate physical activity can improve men's health (US Department of Health and Human Services 1996). Modern interest in research over factors determining pro-health behaviours results from above fact.

Factors proving physical activity during free time can be distinguished into three basic categories referring to (1) individual characteristics of a person, (2) social environment and (3) physical environment (McLeroy et al. 1988; Minkler 1989; Stevenson, Burke 1992; Stokols 1992). Whereas main meaning has personality of a person (McKenzie et al. 1992; Macintyre et al. 1993; Blamey et al. 1995; Bauman, Smith 1999). However, factors referring to social and physical environment are assigned with role modifying physical activity of a person during recreation. Generally, social environment sets trends in pro-health behaviour during time off-work and physical environment decides of availability

and diversity of areas and objects allowing for physical activity outdoors (Dishman 1988; King et al. 1995; Sallis et al. 1998). Physical environment shows possibilities of physical activity during free time; therefore, its influence on pro-health behaviour can be (1) passive, referring to spatial planning of public recreational space of area that encourages (or discourages) for temporary physical activity, and (2) active, referring to spatial planning of sports-recreational objects that directly provide opportunities for specific physical activity (King et al. 1995; Sallis, Owen 1996; Sallis et al. 1998). In other words, active influence on pro-health behaviour is tantamount with proper shaping of the so called 'servicescape'¹ (Liljander, Strandvik 1997).

¹ Environment of services 'servicescape' is described as an environment with atmosphere shaping patronage of the customer. Wherein patronage concept is understood as taking care of the customer in order to control consumer's behaviour. Hence, the term 'servicescape' shows general atmosphere that service recipients experience. Basically, service environment is marked with

Analysing, in the given scheme, the determinants of pro-health behaviour is in accordance with social–ecological perspective of human behaviour. This perspective underlines interactions between a person and social and physical surrounding and, therefore, emphasizes a need to optimize health benefits in ‘man–environment’ relation (Stokols 1996). This postulate also refers to model of multifunctional forestry. Multifunctional forestry, amongst social functions, distinguishes creating for society conditions favouring health and rest. Forest space is a public space. Giving access to forest passively influences pro-health behaviour of people visiting forest for recreational purposes. Only supplying forests with sport-recreational facilities, in ‘servicescape’ formula, actively influences the level of physical activity of visitors. Recreational access in form of car parks, marked routes and camp places only passively influences visitors’ behaviour, whereas active influence on visitors’ behaviour have devices and services encouraging for specific physical activity (e.g. rope park or fitness trails).

In this article, preferences of town inhabitants towards need for developing physical activity (i.e. individual determinants of physical activity) in forest recreational space were presented. Case study of Białystok² agglomeration and surrounding forest areas was conducted. Study is focused especially on Knyszyn Forest neighbouring directly with Białystok from northern and eastern side.

2. Research sample

Survey was conducted amongst 395 inhabitants of Białystok agglomeration, during their time off-work on recreational areas of Białystok (inter alia city parks). Adopted sample, in terms of variables age and sex, represented statistically the whole of Białystok inhabitants ($p < 0,05$). The research was conducted during spring-summer season in years 2009–2010³. Trained students of Tourism and Recreation Department of Białystok Technical University were the pollsters. Broader description of research sample is included in author’s previous paper (Smoleński 2015).

specific emotions. Those environmental emotions influence the changes in cognitive process that occurs and the changes in consumer’s behaviour. In this case, the purpose is active influence of pro-health behaviour during recreation in forest (Liljander, Strandvik 1997).

² Urban areas of Białystok and neighbouring places.

³ Research were conducted within statutory work (which the author was a supervisor) of Tourism and Recreation Department of Białystok Technical University no S/WZ/4/09.

3. Research instrument

For evaluating the need for developing physical activity during outdoor recreation, ‘sensation seeking’ trait of personality was used. According to Zuckerman (2005) theses, each person seeks ‘optimum level of stimulation’, that is, activity that delivers optimal level of stimulus. For characterising inhabitants of Białystok agglomeration, continuum of need for developing physical activity during outdoor recreation, illustrated in seven levels of physical recreational activity (I – people with very small need; II – people with small need; III – people with average small need; IV – people with average need; V – people with average great need; VI – people with great need; VII – people with very big need) was adopted. To category I, people avoiding physical activity during outdoor recreation were assigned. In category VII, people with very big need for physical activity outdoor were included.

Assigning respondents to category was made based on the analysis of answers to two questions from the questionnaire: (1) What is preferred form of recreation in yours place of residence? Received was spectrum of answers, from passive recreation at home to recreation outdoor based on physical activity. (2) What is preferred form of tourism? Received was spectrum of answers, from tourist stays focused on passive recreation to tourist stays focused on active practicing of sport. It enabled the analysis in seven-step scale of ‘declared need for physical activity during recreation outdoor’ (DF).

For next question: (3) How often realised is preferred recreation outdoor? Received was spectrum of declarations, from constant passive recreation at home to systematic activities connected with physical activity outdoor. After analysing the answers to this question, it was possible to verify the declared need in new seven-step scale of ‘realised need for physical activity during outdoor recreation’ (RF).

In the next stage, analysis of recreational use of Knyszyn Forest by inhabitants of Białystok agglomeration was performed. On the basis of analysis of answers to the two following questions, asked in questionnaire, respondents were classified in seven-step scale of ‘realised need for physical activity during recreation in Knyszyn Forest’ (FL). The following questions were asked: (4) What areas of Knyszyn Forest are used for recreation? Received was spectrum of answers, from non-forest urban areas to unmanaged forest area; (5) What recreational activity in Knyszyn Forest consists in? A spectrum of answers was received, from lack of recreational use of Knyszyn Forest to recreational sport practicing in Knyszyn Forest.

Table 1. The declared (DF) and the realized (RF) need for physical activity variety during outdoors recreation, and the realized (FL) need for physical activity variety during recreation in the Knyszyn Forest by inhabitants of the Białystok agglomeration

Need characterization	Per cent of all respondents	Per cent of visitors of the Knyszyn Forest
	N=395 [%]	N=275 [%]
Very low need for physical activity variety		
DF I	11.90	10.55
RF I	11.90	10.55
FL I	31.90	2.18
Low need for physical activity variety		
DF II	13.16	13.09
RF II	13.67	13.09
FL II	21.52	30.91
Below the average need for physical activity variety		
DF III	15.70	12.36
RF III	26.84	22.91
FL III	5.57	8.00
The average need for physical activity variety		
DF IV	26.33	27.27
RF IV	18.48	20.36
FL IV	14.18	20.36
Above the average need for physical activity variety		
DF V	9.37	10.18
RF V	5.82	6.55
FL V	10.38	14.91
High need for physical activity variety		
DF VI	7.85	8.36
RF VI	8.10	9.09
FL VI	8.86	12.73
Very high need for physical activity variety		
DF VII	15.70	18.18
RF VII	15.19	17.45
FL VII	7.59	10.91
Need for low sensations		
DF I + DF II	25.05	23.64
RF I + RF II	25.57	23.64
FL I + FL II	53.42	33.09
Need for average sensations		
DF III + DF IV + DF V	51.40	49.82
RF III + RF IV + RF V	51.14	49.82
FL III + FL IV + FL V	30.13	43.27

Need characterization	Per cent of all respondents	Per cent of visitors of the Knyszyn Forest
	N=395 [%]	N=275 [%]
Need for high sensations		
DF VI + DF VII	23.55	26.54
RF VI + RF VII	23.29	26.54
FL VI + FL VII	16.45	23.64

Source: own elaboration

4. Results

The declared (DF) and realised (RF) need for physical activity during outdoor recreation and realised need for physical activity during recreation in Knyszyn Forest (FL) by inhabitants of Białystok agglomeration are shown in Table 1.

Linear regression showed statistically significant relation at confidence level $p = 0.01$, between

- Declared (DF) and realised (RF) need for physical activity during outdoor recreation (correlation coefficient of 0.9806).
- Declared need for physical activity during outdoor recreation (DF) and realised need for physical activity during recreation in Knyszyn Forest (FL) (correlation coefficient of 0.1453).
- Realised need for physical activity during outdoor recreation (RF) and realised need for physical activity during recreation in Knyszyn Forest (FL) (correlation coefficient of 0.1446).

Moreover, during the analysis of variables of age, sex, family status, material status, education, employment and declared attitude towards nature, linear regression showed the following relatively weak but statistically significant dependence:

- Declared, by inhabitants of Białystok agglomeration, need for physical activity during outdoor recreation (DF):
 - decreased with age of respondent (correlation coefficient of 0.2545 at $p = 0.01$),
 - increased with material prosperity of respondent (correlation coefficient of 0.1075 at $p = 0.05$),
- Realised, by inhabitants of Białystok agglomeration, need for physical activity during outdoor recreation (RF):
 - decreased with age of respondent (correlation coefficient of 0.2340 at $p = 0.01$),
 - increased with material prosperity of respondent (correlation coefficient of 0.1215 at $p = 0.05$),

- Realised need for physical activity during recreation in Knyszyn Forest (FL);

- Increased with material prosperity of respondent (correlation coefficient of 0.1650 at $p = 0.01$),
- Increased with the increase of responsibility at work (correlation coefficient of 0.1127 at $p = 0.05$).

The use of forest landscape of Knyszyn Forest to recreation based on physical activity is shown in Table 2.

5. Discussion of results

The variable of declared need for physical activity (DF) shows, amongst respondents, distribution close to normal: around 25% represents seekers of low sensations, around 51% represents seekers of average sensations and around 24% represents seekers of high sensations connected with physical activity during outdoor recreation (Table 1). The variable of realised need for physical activity (RF) shows very similar distribution – correlation coefficient between variables DF and RF amounts 0.9806. This suggests fulfilling the needs of Białystok inhabitants' in terms of giving access to areas and recreational facilities of Białystok and its surroundings.

Assuming that average physical activity of Białystok inhabitants during recreation influences the improvement of their health⁴, then share of people, amongst Białystok agglomeration inhabitants, who realise pro-health behaviour during recreation amounts to less than 48% (share of people from category RF IV to RF VII). Adopting, however, more realistic view, that pro-health behaviour is visible in striving for physical activity during outdoor recreation, then share of people from RF V to RF VII

⁴ Category RF IV (average) includes people (1) preferring equally recreation at home and outdoor, (2) preferring equally passive and active rest, (3) not participating in organised sport and recreational activities.

Table 2. Recreational attractiveness of forest landscape of the Knyszyn Forest, depending on realized need for physical activity variety (FL), evaluated by inhabitants of the Białystok agglomeration

Recreational preference of landscape	Per cent of all respondents N=395 [%]		
	Need of sensations for physical activity:		
	high	average	low
Lack of recreational interest in the Knyszyn Forest landscape	0.00	0.00	30.38
Recreational sites of the Knyszyn Forest	16.46	30.14	23.02
Recreational sites in the open landscape with forest view	9.11	21.27	16.96
Forest landscapes	7.35	8.87	6.06
Recreational sites in the forest landscape	3.30	2.79	1.50
Natural forest without recreational facilities	1.27	0.76	0.50

Source: own elaboration

amounts only to 29%. It is definitely less in comparison to Australian results (Armstrong et al. 2000; Giles-Corti, Donovan 2002; Rosenberg et al. 2010), according to which, the share of people with pro-health behaviour during outdoor recreation amounts up to 60% of population. This suggests low level of physical culture amongst the inhabitants of Białystok agglomeration and indicates on necessity of promotion of pro-health recreational activity amongst the inhabitants mainly by giving access to attractive and easy accessible areas and recreational facilities used for development of physical activity. This postulate is aimed also to the administration of State Forests', because according to King's et al. thesis (1995), Sallis' and Owen (1996) and Sallis et al. (1998), present level of recreational access to forests comes down to passive influence on people's pro-health behaviour. It does not favour disseminating physical activity during recreation in forests. Above postulate authenticates results of linear regression which indicate that declared (DK) and realised (RK), by inhabitants of Białystok, need for physical activity during outdoor recreation decreases with age and at the same time increases with material prosperity. Age and material status are determinants of spending free time recognised in literature (Giles-Corti, Donovan 2002). Promotion of pro-health behaviour should be addressed to people in middle and older age. Therefore, recreational management of forests used for physical activity should be adjusted to preferences of those age classes. Moreover,

clearly a deficit of recreational-sport facilities, accessible without payments (also in forest landscape) in public recreational area is perceptible. This fact discriminates people of lower material status.

Variable of realised need for physical activity during recreation in Knyszyn Forest (KL) shows distribution definitely different from normal: around 53% represents seekers of low sensation, around 30% seekers of average sensations and around 17% seekers of high sensations connected with physical activity outdoor (Table 1).

Vivid differences, revealed in normal distribution of variables FR and FL, suggest that during recreational trips to Knyszyn Forest, the inhabitants of Białystok in small degree copy their recreational behaviour from Białystok agglomeration – correlation coefficient of 0.1446 at confidence level $p = 0.01$ (Smoleński 2015).

Realised need for physical activity during recreation in Knyszyn Forest (FL) increases with education and perceptible stress at professional work (Smoleński 2015). Whilst, in this case, education favours seeking for sensations both in terms of physical activity and diversity of forest landscape, stress, accompanying responsibility connected with performed professional work, favours choice of forest landscape for realisation of physical activity in order to limit the stimuli from social environment.

Results shown in Table 2 indicate that non-transformed forest landscape contribute, to a considerable degree, to recreation realising high need for physical activity (more

than 40% of users of this area for recreational purposes). At the same time, it needs to be emphasised that share of people amongst Białystok agglomeration inhabitants using forest area of Knyszyn Forest and realising high need for physical activity is minimal and amounts to a little over 3% (i.e. around 10,000 people⁵). Non-transformed forest landscape lacking recreational management is used by a little over 1% of inhabitants of Białystok agglomeration realising high need for physical activity (i.e. around 4,000 people). Above data reflect actual market of Białystok (characterised by high need for outdoor recreational activity) for recreational services localised in natural forest landscapes. Those people are potential recipients of offer of long-distance hiking trails localised in forest landscapes. It is confirmed in author's field observations, indicating on small (even incidental) usage of tourist trails running through forests of Knyszyn Forests not neighbouring with urbanised areas.^{6,7} However, people with limited need for physical activity during recreation in forests use (for walks or for passive rest) forest landscape bordering with urbanised areas or neighbouring forest car park. Those people are slightly more numerous segment in comparison with the one discussed earlier, because they represent slightly over 4% of whole of the inhabitants of Białystok agglomeration (i.e. around 13,000 of visitors of Knyszyn Forests).

Forest landscape of Knyszyn Forest transformed for recreational purposes with access to open landscape (in formula of the so-called forest parks) is used by definitely more numerous group of recipients (more than 22% of Białystok agglomeration inhabitants). Recreational areas of 'forest parks' are visited mainly by people with average (around 40% of visitors) and small (around 27% of visitors) need for physical activity. Radically different trends of recreational preferences are visible: (1) natural forest landscapes are visited mostly in order to realise high need for physical activity; (2) forest landscapes transformed for recreational purposes are visited mainly in order to

pursue limited physical activity. It is understandable for two reasons:

1. Amongst inhabitants of Białystok agglomeration, people with declared high need for physical activity during outdoor recreation constitute only around 24% (Table 1). Majority of inhabitants prefer forms of recreation with more or less limited physical effort.

2. Natural forest landscapes are a category of the so-called closed landscapes that do not favour recreation with limited physical effort. Passive rest is associated with stage landscapes. Therefore, open recreational areas of Knyszyn Forest region are used by more than 47% of Białystok agglomeration inhabitants. Majority of those inhabitants constitute people preferring rest with limited physical activity (more than 80% of people visiting those areas), therein strictly passive rest (almost 36% of people visiting those areas (Table 2).

Recreational use of forest areas is strongly limited because of its character of closed landscapes, unaccepted for rest by vast majority of town residents (Smoleński 2015). Nevertheless, proper access to recreational forest area in form of 'servicescape' (forest area directly neighbouring with Białystok agglomeration with access to natural or artificial landscape windows and open spaces, equipped in devices favouring physical activity, e.g. in form of fitness trails) can activate potential market for forest recreational services.⁸

6. Summary

Objects (devices and services) encouraging for specific recreational physical activity have active influence on pro-health behaviour of visitors. Active influence depends on developing, the so-called, servicescape, that is, general atmosphere of place that encourages for pro-health behaviour connected with physical activity during recreation in forest. In this case, concept of effectiveness of influence of 'servicescape' refers to the influence on changes in recreational behaviour (habits) of people visiting forest areas. In other words, it refers to active influence on formation of pro-health behaviour. Examples of good practice developed in the world, joining healthy bioclimate of forest (Krzyszowska-Kostrowicka 1999) with objects of physical activity could be (1) fitness trails (racing, agility, training, test and load), (2) playgrounds with set of efficiency devices for children *inter alia* with tree houses, (3) outdoor fitness rooms and (4) rope parks and Tyrolean traverse.

⁸Amongst inhabitants of Białystok agglomeration, people with declared above average need for physical activity during outdoor recreation (DF V to DF VII) constitute around 33%.

⁵ Assuming that Białystok agglomeration (Białystok and neighbouring towns) has around 310,000 inhabitants (The Polish Central Statistical Office 2011).

⁶ To illustrate disproportion, around 10,000 of potential recipients from Białystok agglomeration, dominating in this region, have at their disposal around 1,000 km of tourist trails localised on around 105,000 ha of forest complex.

⁷ Moreover, Horne and Ovaskainen, within research on recreational system of Helsinki's forests, suggest that visitors have their own strong preferences towards specific visited places and have little interest in other recreational areas potentially available for them (after Horne et al. 2005).

Passive contribution of State Forests' administration, that is, giving access to forests of Knyszyn Forest for recreational purposes, in developing pro-health behaviour has reached its goal for around 7% of the inhabitants of Białystok agglomeration. Further development of sport-recreational devices in forest space that directly delivers opportunities for physical activity can hit on needs around 24% of the inhabitants of Białystok agglomeration. Those inhabitants declare high need for physical activity during outdoor recreation (on present, as proved earlier, low level of awareness of physical culture). It is all the more probable, because high need for change of landscape for outdoor recreational purposes is declared by almost 30% of Białystok agglomeration inhabitants⁹ (Smoleński 2015). The above difference in effectiveness of developing pro-health behaviour of town inhabitants between passive and active influence of recreational space was shown earlier in literature on the subject (King et al. 1995; Sallis, Owen 1996; Sallis et al. 1998).

Nevertheless, presented results, indicating on low physical activity of examined population, suggest the need for developing research on modifying the role of factors of social and physical environment towards active influence on pro-health behaviour during recreation in forest landscapes.

Conflict of interest

The author declares the lack of potential conflicts.

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⁹ Te 30% mieszkańców aglomeracji białostockiej wyznacza potencjalny rynek na leśne usługi rekreacyjne.

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