

# Fitness Parks: A Comparative Study of the Components of Jakarta-Manila Parks and their Responsiveness to Support Physical Activities

**Franklin S. Fontanoza Jr., Nappy L. Navarra, D.Engg.**

Philippine Association of Landscape Architects

Email : [fsfontanozajr@gmail.com](mailto:fsfontanozajr@gmail.com), [nappy.navarra@gmail.com](mailto:nappy.navarra@gmail.com)

**Abstract.** Fitness has become more popular due to the cultural phenomenon that being fit can enhance one's perception of beauty. The sprouting of various outlets for physical activity such as bodybuilding gyms that cater to weightlifting, outdoor group dance classes, sports camps and cause-oriented marathons can be noticed in numerous parts of the world. But slowly its concept, that being fit is a mere physical representation of beauty, is shifting into a more health-oriented consciousness. Annual reports have shown that coronary heart disease is still in the top rank of the death causes in the world. This information has led more people to protect their health through several lifestyle improvements, with regular exercise being one of these methods to achieve health goals. Its numerous benefits range from the lowering of blood pressure, heightened learning capacity to the improvement of mood. The health-rooted awareness of the need for physical activities to support one's daily requirement has spread worldwide and has now been recognized by a lot of people.

Parks are usually designed with amenities such as playgrounds, pathways and wide open spaces where people from all walks of life convene, interact with each other and do various physical activities. With this in mind, the capacity of parks to host such activities has to be studied to determine which components do people who engage in active healthy lifestyles find highly attractive and usable. An analysis of such could lead to effective space programming of our local neighborhood parks making it more perceptive to the physical needs of the people. Two major sports complexes from South East Asia have been used as case studies to assess the responsiveness of the locals to the amenities offered in each complex to address health goals. The comparison revealed that the Gelora Bung Karno Complex in Jakarta, Indonesia has more activity-oriented amenities and longer operating hours, making it more receptive to meet the physical activity requirement.

Keywords: fitness parks, components, physical activity, health

## 1. Introduction

Ancient history has seen the primitive man engaging in physical activities as shown in his nomadic lifestyle of traversing long distances to move from one tribe to another on his bare feet. With the basic human need to provide food for himself and his family, he has developed a strong body to hunt, gather food and survive through harsh conditions. Over time, man started to build to empires and during



those glorious eras, physical activities evolved and became part of his life. Athens and Sparta have seen a lot of vigorous training fit for the battlefield in their constant plight to claim territory over lands and the natural resources these possessed.

Ancient civilizations in China have promoted physical activities such as Cong Fu gymnastics, archery and dancing due to Confucius teachings promoting an active lifestyle. While in other parts of South East Asia, Sepak Takraw, a form of sport, started as early as the 15<sup>th</sup> century. In 1959, the South East Asian games or SEA games was born, scheduled every two years to bring South East Asian countries together.

Indonesia's fitness history started with tribal practices that dealt mostly with rituals and war folk dance. Archery became a sport in its classical times; football and badminton were introduced by the Dutch when the country was colonized. Badminton and basketball have become two of the most popular sports catering to local youths all over Indonesia.

The Philippines have almost had the same historical background with other South East Asian countries. Pre-Spanish period, the natives had their share of wandering forests for food and shelter, developing stronger limbs from running and climbing mountainous terrain. During the colonial era, several sports were introduced by the Spaniards and Americans such as Basketball, Soccer and Volleyball. Swimming has become a favorite pastime of children, most especially during warm summer months as they swam in rivers and the sea. The love for sports and the outdoors have been incorporated in the daily routine of Filipinos.

In the development of high-speed technology, urbanization became a global phenomenon and affected the entire world. Population increased immensely in cities, as rural-born families relocated and made settlements in urban areas, increasing the concentration of people in a limited city space. Transportation naturally developed after as people desired to move quicker from one place to another. Private cars and public utility vehicles were improved to ease the accessibility of a lot of places. This came with a price, resulting to pollution. With an expanding population, overcrowding became a problem as the open spaces originally allotted for recreation decreased in area and were converted to housing projects. People further increased their health risks as they became more inactive due to the comfort of vehicles at our disposal. Air pollution did not help either as it lessened the favorability of walking outdoors. The World Health Organization published an article through [www.who.int](http://www.who.int) stating that in 2012, ischemic heart disease, stroke, respiratory infections and lung disease topped the cause of death worldwide. The lack of physical activities has become a major health concern that our generation should start taking more seriously.

Exercise and other physical activities' importance cannot be overstated especially when it reaps a lot of health benefits. Researches have shown that exercising within a recommended intensity of 65 percent – 75 percent maximum heart rate for at least 30 minutes a day could lower blood pressure, make a person feel less anxious and release endorphins to create a more positive psychological state and enhanced mood. Exercise can limit excess weight gain by burning calories. Various physical activities such as sports and dance classes can also improve flexibility, stabilize heart rate and strengthen the immune system.

Outdoor spaces provide venues for physical activities to prevent the sedentary lifestyle that most of us experience in our lives. Being outdoors gives us a boost of Vitamin D which we all need to reduce pale skin and for us to absorb calcium. Exercising outdoors introduces the body to unpredictable factors such as wind resistance and hilly slopes. Communing with nature, plants in the gardens supply the much-required oxygen during heightened physical activity. On top of it all, exercising outdoors is free of charge and can be done in your own time and pace.

### *1.1. Problem Setting*

21<sup>st</sup> century problems, including the health risks that we face today, have resulted from the urbanization of our cities. These have left us with limited open spaces which resulted from the negligence of proper implementation of responsive design or afterthoughts of poor city planning as

damage control. Our open spaces have been affected to the point that the parks' capacity to provide livable leisure areas for growth and recreation has significantly diminished. Eventually, in the continued mismanagement of our lands, the negative effects would be felt by its users through the bodily manifestation of health risks.

Merging the physical need of the body to perform daily exercises and the desire of the human spirit to experience the bounty of nature should result to outdoor parks that incorporate spaces and amenities to house numerous physical activities. Neighborhood parks in Manila have been redesigned with jogging paths and several streets have included bike trails and improved sidewalks, to accommodate the growing requirement of Filipinos who engage themselves in physical activities. In Indonesia, empty lots are automatically planted with vegetation and kept maintained to be in utmost condition. Most of their parks have an area for fitness, equipped with outdoor equipment. Family members playfully use them, a strategy to introduce children to fitness at a young age.

But data regarding parks that should provide these amenities or at least have spaces allotted for exercise have yet to be gathered. The responsiveness of parks to cater to the daily physical activity requirement has yet to be assessed and checked whether the design of open spaces to promote fitness and healthy living are satisfactory or would need improvement.

This paper would try to address the following concerns:

1.1.1. How can a park become responsive to address the fitness needs of its users that could significantly lead to an increase in their physical activity level?

1.1.2. Which park amenities do patrons of the parks use most to meet their daily physical activity goals?

1.1.3. What park amenities attract people to use the park and exercise outdoors?

1.1.4. Why do patrons of the parks visit the specific parks?

## *1.2. Goals and Objectives*

The main goal of this paper is to assess the responsiveness of the park to the physical activity requirement of its users. It tries to determine which park amenities do patrons deem attractive and useful based on the usability and accessibility of that particular amenity. It could also give initial information if they exercise in the park due to its proximity from their point of origin or if it is the unique features or specific amenities of the park that attracts them.

## *1.3. Scope and Delimitation*

The two parks are chosen based on the following criteria: Relative size of a park that could house several park amenities, Availability of park patrons (runners and joggers) in the parks, Existence of at least a track oval or jogging paths, outdoor exercise equipment or sports facility that can be used by patrons to exercise, Proximity to residential properties and office buildings and Accessibility via roads and pedestrianized sidewalks along its perimeter.

Only two parks will be assessed in this study to have at least reasonable comparative data. One is the PSC PhilSports Complex in Pasig City in Manila, Philippines while the other is Gelora Bung Karno with Krida Loka in Jakarta, Indonesia. Gender and age bracket estimates will be observed for future reference. The level of fitness capacity of park users will not be included. The summer months of March and April will be considered when the weather is conducive and tolerable enough to do outdoor physical activities.

## *1.4. Significance of the Study*

The study would benefit landscape architects, urban planners and the local government in planning and coming up with park designs that could effectively cater to the daily physical activity requirements of their users. Park management team would also benefit from the study using the information gathered to promote the well-designed park to a lot of guests and fitness enthusiasts which could eventually lead to an increase in their revenue. This could also serve as a supplementary study for researches that deal with fitness and health.

## **2. Methodology**

The following methods were used.

### *2.1. Review of Related Literature*

Public parks and recreation in the United States are studied in this article by the President's Council on Physical Fitness and Sports, posted in March 2008. Several researches in the article mentioned of the parks' ability to promote physical activity and recorded how much physical activity happens inside them. Park characteristics have been described and assessed based on what Americans find most attractive and have come up with the following considerations: park location (its proximity and walkability to residential properties and commercial buildings for access), park features (landscape elements such as trails, lawns, playgrounds and picnic groves), park programming (activities that the locals find interesting such as activity classes, cultural events and concerts, and sports competitions), park outreach (people's awareness of a park nearby through promotional activities and methods such as flyers, agencies and other social media) and park safety and maintenance (the need for safety and the quality of the landscape elements to be well maintained).

The paper written by Cohen, et. al. entitled *Parks and physical activity: Why are some parks used more than others?* studies how many people use the parks and determines which park feature the majority prefer to use. The authors used surveys and interviewed 51 park directors, park users and residents located around the parks. Direct observations have been made to determine which park features are more likely to be used during a seven-day observation period. Several information have been gathered such as which gender uses which type of outdoor feature more, the park's size capacity to house more organized activities that could lead to more park users and which park amenities are mostly used and neglected during those observation months. The study has concluded that focusing on park programming and promoting unique park features specific to the park would lead to an increased attendance of park users.

### *2.2. Site Criteria*

The sites were chosen on the following parameters: Park location (proximity to home or workplace), Park amenities (jogging trails, basketball courts, outdoor gym equipment, etc.), Park programming (seasonal social activities such as sports events, zumba, yoga, etc.), Park outreach (availability of information about the park) and Park safety and maintenance.

### *2.3. On-site observation*

Park patrons using the amenities were observed on site. The quantity was approximated during the chosen period of observation to have primary data on the number of people patronizing the amenities of the park.

Some park proponents were asked by the researcher about their usage of the park, like which amenity they use and enjoy most, how often they come to the complex and whom they usually come with. The security guard of the track oval was also asked about his general observations of the users of the site.

### *2.4. Site photos*

Photos were taken to document the parks and their amenities to visually illustrate the on-site conditions. This could also help in documenting details that the researcher may have missed during the observation period.

## **3. Results and Discussion**

The Gelora Bung Karno Stadium within the Gelora Senayan Complex, encompassing 284.2 hectares, is located in Central Jakarta, Indonesia. It is owned by the Football Association of Indonesia and has a

seating capacity of 88,000 on grass surface. Back then, it used to house 120,800 standing persons but has been reduced to 100,800 due to renovations made for the 2007 Asian Cup. Named after Indonesia's first president Sukarno, it mostly stages football matches which became a popular sport in the country and other international sporting activities such as the Asian Games, the SEA Games and the Tiger Cup. It was also the venue for the Pope John Paul II's visit wherein he said a Catholic mass and the centennial anniversary of Indonesian National Awakening day.

The Gelora Bung Karno Sports Complex has the following amenities: Gelora Bung Karno Stadium, the main stadium for football competitions, Madya Stadium, the smaller sized stadium for track and field events, Athletic Track Ovals (private and public), Outdoor gym equipment, Tennis Stadium (indoor and outdoor courts), Aquatics Stadium which has a capacity of 8,000 as well, Hockey field, Baseball field/ Softball field, Indoor gymnasiums for archery, wrestling, karate, silat and other martial arts sporting events, Senayan golf course, Lapangan A, B, C are several open air football training fields for the training of Indonesia's national football team, Al Bina mosque, Car circuit controlled by radio, and the Central Office of the National Sports Committee of Indonesia.

The Philippine Institute of Sports Complex or PhilSports Complex is a national sports development in the Philippines. The Philippine Sports Commission shares the total land area with the Department of Education. It is bound by Meralco Avenue, St. Paul Street, Molave Street, St. Martin Street and Capt. Javier Street. As stated in the Republic Act 6847 which gave birth to the Philippine Sports Commission, there was a need for Filipino athletes to have fully equipped facilities, complete with several sports amenities and dormitories to support them.

The PhilSports Arena has a seating capacity of 10,000 persons while the Football and Athletics Stadium can house up to 20,000 heads. Curfew hours are from 5:30 am to 10:00 pm.

The PhilSports Complex has the following amenities: Building offices, Dormitories, Karatedo gym on the roof deck, A dining hall, Amphitheatre, Fencing Hall, Meditation area and lagoon, Mini forest, PSC Gym – Basketball court, Bake shop, Swimming pool, Pool grandstand, Diving pool, Water reservoir, Multi-purpose area, Bleachers where they hold the dance/ sports training center and muay thai, Track oval, and the Grandstand.

### *3.1. Park location*

The Gelora Bung Karno Sports Complex is bound by main roads and can be accessed through several roads. It has several entry points and can easily be accessed via public transportation and private vehicles. Most of the sports training facilities are open to public (Table 01).

The PhilSports Complex can be accessed through two entry points, one is for vehicular entry and the other one, is a one-way exit point which is also used for pedestrian access. It is a private complex since there are several office buildings and dormitories within the compound. Several facilities are open to public if not in use by the local athletes.

### *3.2. Park amenities*

The Indonesian sports complex of Gelora Bung Karno has main courts but has an advantage with the presence of football fields since football has become a very popular sport in the country. Indonesia has national teams playing for various sports. The track oval is very busy on weekends, as runners and joggers flock the track oval. Outdoor fitness equipment is strategically located along the oval and freely used by many.

PhilSports Complex is also packed with runners and joggers on weekdays and weekends, although there is a certain period where the track oval is empty due to intense afternoon heat. The swimming pool is conducive for doing laps all year round, but mostly becomes occupied during the summer months since swimming lessons are popular for kids to learn in their vacation. Basketball athletes train in the indoor courts mostly for the governor's cup and commissioner's cup.

Most of the sport facilities inside Gelora Bung Karno Sports Complex and the PhilSports Complex have curfew. Depending on the event and usually rented out by users, the operational hours are

relatively compliant to users' schedule. Gelora Bung Karno Complex has two athletic ovals: one is for the athletes, the other for the public. The public track oval opens early and closes at late hours. PhilSports Complex's track oval is open every day from 5:30 am to 9:00 pm. Usage of the track oval is free. The diving area is limited to athletes only as well as the private dormitories. The swimming pool is open from 8:00 am to 11:30 am and resumes by 1:00 pm up to 4:00 pm in the afternoon, Tuesdays thru Sundays. It is closed on Mondays for cleaning and maintenance. Pool management charges 45 Php per head in the entrance.

### 3.3. Park programming

Social activities and sporting events are set in the parks' calendar of events. Renovations ongoing, The Gelora Bung Karno Sports Complex is scheduled to host the SEA Games in the Main Stadium in 2018.

The PhilSports Complex has been a favorite venue of basketball tournaments. Mostly this sport is played in the complex.

The user-friendliness of the amenities attracts people to utilize the facilities. High volumes of users can be noted in most amenities of the Gelora Bung Karno Sports Complex. Amenities in PhilSports Complex, though without fee requirement, have a small patronage. This probably might be caused by the lack of information about the complex having those facilities to offer or maintenance issue.

### 3.4. Park outreach

The Gelora Bung Karno Sports Complex can be viewed online thru [www.gelorabungkarno.co.id](http://www.gelorabungkarno.co.id). The list of facilities, venues and events can be found in the site. It also has links to other social media.

The PhilSports Commission launched its website thru [www.web.psc.gov.ph](http://www.web.psc.gov.ph). It has been organized to view the facilities in the complex as well as venue rental fees for each facility depending on the type of event or training. The calendar of events can also be viewed and the schedule the amenities are open.

### 3.5. Park safety and maintenance

The parks are open to public but certain areas have limited access unless an event is scheduled in that area. The track oval of the Gelora Bung Karno Sports Complex is free to use as well as the outdoor gym equipment which are used by enthusiasts with higher intensity training goals other than just cardio exercises. The oval may be gated but can be accessed through opened gates. The Krida Loka which is the designated fitness jogging park has limited access since this amenity is gated and can only be accessed through its main gate on the opposite side of the main stadium.

Although PhilSports Complex is a gated development with restricted access, it has a relatively wide operating hours that can accommodate the public. Security guards are placed strategically within the complex. The most used facilities such as the swimming pool, the indoor basketball court and the track oval are well maintained but the outdoor amenities such as the lagoon, meditation area and amphitheatre are neglected.

**Table 1.** Comparison of Gelora Bung Karno Complex and PhilSports Complex.

	Gelora Bung Karno Complex	PhilSports Complex	Both
Park Location	<ul style="list-style-type: none"> <li>Several entry points</li> <li>Most of the sports training facilities are accessible to the public</li> </ul>	<ul style="list-style-type: none"> <li>Limited to two entry points for pedestrians</li> <li>One entry point is a two-way entry-exit point while another is meant for exiting vehicles only</li> </ul>	<ul style="list-style-type: none"> <li>Bound by main roads</li> <li>Can be accessed by pedestrians through sidewalks</li> <li>Can be accessed via public and private vehicles</li> </ul>

Park Amenities	<ul style="list-style-type: none"> <li>Has the following amenities: <ul style="list-style-type: none"> <li>Gelora Bung Karno Stadium, the main stadium for football competitions</li> <li>Madya Stadium, the smaller sized stadium for track and field events</li> <li>Athletic Track Ovals (private and public)</li> <li>Tennis Stadium (indoor and outdoor courts)</li> <li>Aquatics Stadium which has a capacity of 8,000 as well</li> <li>Hockey field</li> <li>Baseball field/ Softball field</li> <li>Indoor gymnasiums for archery, wrestling, karate, silat and other martial arts sporting events</li> <li>Senayan golf course</li> <li>Lapangan A, B, C are several open air football training fields for the training of Indonesia's national football team</li> <li>Al Bina mosque</li> <li>Car circuit controlled by radio</li> <li>Central Office of the National Sports Committee of Indonesia</li> </ul> </li> <li>Has football fields</li> <li>Has outdoor gym equipment</li> <li>Most of the facilities are open</li> <li>The Stadiums are open to the public during events only</li> <li>The Athletic track oval inside the stadium is used by athletes only, but the Athletic track oval outside is for public usage</li> <li>The Aquatic stadium charges 15,000 during weekdays and 20,000 during weekends</li> </ul>	<ul style="list-style-type: none"> <li>Has the following amenities: <ul style="list-style-type: none"> <li>Building offices</li> <li>Dormitories</li> <li>Karatedo gym on the roof deck</li> <li>A dining hall</li> <li>Amphitheatre</li> <li>Fencing Hall</li> <li>Meditation area</li> <li>Mini forest</li> <li>PSC Gym – Basketball court</li> <li>Bake shop</li> <li>Swimming pool</li> <li>Pool grandstand</li> <li>Diving pool</li> <li>Water reservoir</li> <li>Multi-purpose area</li> <li>Bleachers where they hold the dance/ sports training center and muaythai</li> <li>Track oval</li> <li>Grandstand</li> <li>Lagoon</li> </ul> </li> <li>Most of the amenities are open except for the Diving pool which is for athletes only and the dormitories and the dining hall which are for residents only</li> <li>An outdoor volleyball court is currently being constructed</li> <li>The Swimming pool charges 45Php per entry.</li> </ul>	<ul style="list-style-type: none"> <li>The main stadiums are open to public</li> <li>The Athletic track ovals are open to public</li> <li>The Aquatic stadium and swimming pools are open to the public</li> <li>The Central offices are closed to the public unless you are an employee</li> <li>Both sports complexes have operational hours</li> </ul>
Park Programming	<ul style="list-style-type: none"> <li>Social activities and sporting events are posted in the calendar of events</li> <li>The South East Asian Games are scheduled in 2018</li> <li>High volume of users can be noted using the amenities</li> </ul>	<ul style="list-style-type: none"> <li>Basketball tournaments have been a favorite event in the sports complex</li> <li>Moderate volume of users can be noted using the amenities</li> </ul>	<ul style="list-style-type: none"> <li>Promote games and sporting activities</li> </ul>
Park Outreach	<ul style="list-style-type: none"> <li><a href="http://www.gelorabungkarno.co.id">www.gelorabungkarno.co.id</a></li> <li>Dual language both in Bahasa and in English</li> <li>Links to other social media accounts</li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.web.psc.gov.ph">www.web.psc.gov.ph</a></li> <li>Rental fees per amenity can be viewed for easy reference</li> <li>Contains links to other government agencies</li> </ul>	<ul style="list-style-type: none"> <li>Both have browser-friendly websites</li> <li>Has calendar of events</li> </ul>
Park Safety and Maintenance	<ul style="list-style-type: none"> <li>The park amenities are functional and kept in good condition</li> <li>Krida Loka, a jogging park, is gated and access to it is limited to one entry point</li> <li>Krida Loka's maintenance needs to be improved</li> </ul>	<ul style="list-style-type: none"> <li>Security guards are placed strategically in stations around the site</li> <li>The facilities most used such as the swimming pool, the track oval and the basketball gyms are maintained, while the rest needs proper maintenance</li> </ul>	

#### 4. Conclusion

A well-designed park has the capacity to provide spaces for outdoor physical activities which the public can freely access and enjoy. It should have spaces for various recreational activities to meet the

daily physical activity requirement of a person to grow strong and healthy. The benefits of exercise and doing sports in a space-programmed area are numerous as it significantly promotes overall health and well-being.

To achieve optimum health, exercise should be a part of one's daily routine. Thus, spaces to do exercise and other physical activities should be within the reach of every person. Public parks that are free and accessible can provide such spaces to house these activities. The responsiveness of our public parks to the physical daily requirement of a person can significantly lead to better space programming and in return could attract more park patrons to use the facilities to reach their fitness goals. Gelora Bung Karno Sports Complex in Central Jakarta, Indonesia has proved to be more responsive to locals' physical activity requirement based on the completeness of sports amenities and accessibility of most facilities within the complex. It positively responds to the call of the public for a venue where they can exercise and participate in various physical activities as recognized in the accessibility and free usability of the amenities that are kept in good condition, while still maintaining quality spaces for the local athletes to grow and train. Much can be learned and emulated by the Philippines to address the issue of inactivity by maximizing access to these facilities, and making a strong commitment to promote health and fitness through exercise, sports and other physical activities to the public through the local health department.

## 5. Acknowledgment

Many thanks to the patient professor and classmates of LArch 255 and Arch. Christian Valenzuela for accompanying the researcher in his data collection for this paper. Special thanks to Rina Dwica Desyana, Cici Nurfatimah for the warm accommodation in Bogor Agricultural University (IPB) and Agus Susanto for showing us around. Immense gratitude goes out to the family for funding the researcher's studies.

## References

- [1] Baran, P., Bocarro, J., Cosco, N., Edwards, M., Fang K., Floyd, M., Moore, R., Smith, W., and Suau, L. *Park-Based Physical Activity Among Children and Adolescents*. Retrieved from <http://dx/doi.org/10.1016/j.amepre.2011.04.013>
- [2] Besenyi, G., Hipp, J., Hughey, S., Kaczynski, A., Schipperijn, J., Stanis, S., and Wilcox, S. *ParkIndex: Development of a standardized metric park access for research and planning*. Retrieved from: <http://dx/doi.org/10.1016/j.ypped.2016.02.012>
- [3] Cain, K., Carlson, J., Conway, T., Frank, L., Kerr, J., King, A., Saelens, B., and Sallis, J. *Interactions between psychosocial and built environment factors in explaining older adults' physical activity*. Retrieved from <http://dx/doi.org/10.1016/j.ypped.2011.10.004>
- [4] Cohen, D., Kaczynski, A., and Mowen, A. *The Potential of Parks and Recreation in Addressing Physical Activity and Fitness*. President's Council on Physical Fitness and Sports. Research Digest, Series 9, No.1. (2008).
- [5] Cohen, D., Han, B., and McKenzie, T. *Quantifying the contribution of neighborhood parks to physical activity*. Retrieved from: <http://dx/doi.org/10.1016/j.ypped.2013.06.021>
- [6] Cohen, D., Derose, K., Marsh, T., Martinez, H., McKenzie, T., Setodji, C. and Williamson, S. *Parks and physical activity: Why are some parks used more than others?* Retrieved from: <http://dx/doi.org/10.1016/j.ypped.2009.08.020>
- [7] Floyd, M., Taylor, W., and Whitt-Glover, M. *Measurement of Park and Recreation Environments That Support Physical Activity in Low-Income Communities of Color*. Retrieved from <http://dx/doi.org/10.1016/j.amepre.2009.010.009>