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**Article Title:** Organizational Resilience of Community Sport Clubs Impacted by Natural Disasters

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### **Abstract**

When community sport clubs are impacted by natural disasters, organizational resilience is critical to recovery. Within this study, organizational resilience is conceptualized as a function of robustness, redundancy, resourcefulness, and rapidity and applied to community sport clubs. Using data from a survey of sport clubs ( $n=200$ ) in Queensland, Australia, the organizational resilience of affected clubs and their recovery from natural disasters (flooding, cyclone) was investigated. The findings show that clubs used human and financial resources predominantly in their recovery efforts. Organizational resilience, number of members, and the use of government grants had a significant positive effect on the extent of the club's perceived overall recovery. Clubs providing motor sports, equestrian, and golf recovered to a significantly lower extent. Proactively pursuing government grants, suitable insurance coverage, and inter-organizational relationships were identified as factors that assisted clubs in becoming more resilient. The measurement of resilience should be refined in future research.

**Keywords:** Community sport; community sport organization; non-profit sport organization; natural disaster; resilience

## **Introduction**

Community sport clubs are critical to the provision of sport across several countries such as Canada (Misener & Doherty, 2009), Germany (Breuer & Wicker, 2011), Switzerland (Lamprecht, Fischer, & Stamm, 2011), Belgium (Vos et al., 2011), Scotland (Allison, 2001), the UK (Taylor, Barrett, & Nichols, 2009), and Australia (Cuskelly, 2004). They not only provide sport opportunities for the population, but also provide settings and opportunities in local communities for social programs such as convivial gatherings and social festivities. In addition to the provision of these programs, sport clubs take a lead in integrating youths, immigrants, and seniors into communities, assisting in keeping youths off the street, and teaching applied democracy (Breuer & Wicker, 2011; Lamprecht et al., 2011). In accomplishing this, sport clubs contribute to community building and are regarded as important institutions in many communities. Nevertheless, community sport clubs experience organizational problems that impact on their functioning and capability to provide services to their local community. The most frequently cited problems relate to the recruitment and retention of volunteers as well as the financial challenges faced by clubs (Lamprecht et al., 2011; Taylor et al., 2009).

While the issues highlighted above are typical for sport clubs in many countries, sport clubs in Queensland (Australia) have also been confronted by challenges stemming from recent natural disasters. Queensland has suffered from two major natural disasters in recent years. First, from December 2010 to February 2011, Queensland was affected by serious flooding in which approximately 60% of the state's geographic areas were affected. Second, in March 2011, North Queensland was struck by cyclone Yasi delivering 290km/h winds causing serious damage across the region (Reilly, Wright, & Hannan, 2011). Community sport clubs across the state were impacted in that physical facilities like clubhouses and training facilities were damaged, requiring renovation or rebuilding; and thus many

community sport clubs either temporarily or permanently shut down operations. The Queensland Government (2011a) provided financial support to hundreds of community sport clubs to rebuild infrastructure. However, the recovery effort requires more than financial support from government, as characteristics inherent to a club may aid in recovery.

Developing an understanding of organizational characteristics that can assist clubs in recovering from natural disasters is important because natural disasters can impact community sport clubs in almost any part of the world and often arrive without warning. Meanwhile, this topic is also relevant due to climate change and a corresponding increased likelihood of extreme weather events and natural disasters (Intergovernmental Panel on Climate Change [IPCC], 2012). To date, research examining how sport organizations confront natural disasters has been limited. Kellett and Turner (2009) investigated sport organizations in times of drought, and how water shortages or drought conditions affect governance structures. However, the response of sport organizations to the impact of drought conditions was not explored. Hence, an opportunity existed for research investigating the impact of natural disasters on sport organizations and the factors associated with organizational recovery.

The purpose of this research was to examine organizational resilience of community sport clubs in the aftermath of natural disasters. Specifically, the current research investigates three research questions: 1) How resilient are community sport organizations?, 2) what resources are critical to organizational recovery in the short-term and long-term? And 3) to what extent does organizational resilience contribute to the overall recovery of community sport clubs? The framework for this research is based on the concept of organizational resilience, comprised of four dimensions: robustness, redundancy, resourcefulness, and rapidity (Bruneau et al., 2003). The research questions were analyzed using data from an online questionnaire administered to community sport clubs in flood and cyclone affected

regions of Queensland, Australia. This study is the first to conceptualize and investigate organizational resilience among community sport clubs. The findings are relevant to community sport clubs in other countries that are likely to be affected by natural disasters including North America (e.g., tornados and hurricanes), New Zealand (e.g., earthquakes), and Europe (e.g., flooding).

## **Conceptual framework and literature review**

### **The concept of resilience**

Resilience can be defined as “the ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat” (Cutter et al., 2008, p. 599). In brief, resilience is the ability to bounce back or recover from stress (Smith et al., 2008). Previous studies argue that resilience is multi-dimensional (Cutter et al., 2008; Gibson & Tarrant, 2010). Tobin (1999) has applied the concept of resilience to natural disasters by acknowledging that “resilient communities should be able to withstand extreme geophysical processes and recover rapidly from disasters whenever they occur” (Tobin, 1999, p. 15). Therefore, this concept resonates with the current research and the investigation of how sport clubs recover from the impact of natural disasters. The concept of resilience has been applied to individuals, communities, and organizations. A brief overview of individual resilience and community resilience is provided in the next two paragraphs, while organizational resilience is discussed in more detail in the next section.

On an individual level, the concept of resilience has mainly been used to explain the response of individuals to adverse circumstances such as violence and death of family members (e.g., Hardy, Concato, & Gill, 2004; Seery, Holman, & Silver, 2010). Studies on the individual level have also been concerned with the development and the testing (Connor &

Davidson, 2003; Smith et al., 2008) of appropriate scales to measure individual resilience.

Previous research has shown that individual resilience can be explained by a number of personal and environmental factors (e.g., Hardy et al., 2004).

Several conceptual frameworks have been developed to explain community resilience with some focusing specifically on community resilience after disasters (e.g., Cutter et al., 2008; Norris et al., 2008; Tobin, 1999). The framework of Tobin (1999) included a mitigation model, a structural-cognitive model, and a recovery model. Cutter et al. (2008) suggested a set of community resilience indicators that include ecological, social, economic, institutional, infrastructure, and community competence dimensions. Norris et al. (2008) advanced community resilience as a set of networked adaptive capacities by highlighting resources, robustness, redundancy, and rapidity as key components in their model. Without exception, conceptual models of resilience are multi-dimensional and consequently rather complex and difficult to measure. In some instances, community resilience models have been tested with surveys of individuals (e.g., Paton, Millar, & Johnston, 2001; Tobin & Whiteford, 2002) instead of assessing indicators on the community level. This suggests challenges in measurement and provides one explanation for why these models have rarely been tested empirically. Moreover, it is difficult for policy makers to translate resilience models into concrete actions and policies (Price-Robertson & Knight, 2012). A key finding from previous research is that low levels of community resilience have been detected when applying the Tobin model (Tobin, 1999; Tobin & Whiteford, 2002).

### **Organizational resilience**

The concept of resilience has also been applied to organizations. Organizational resilience has been defined as “the maintenance of positive adjustment under challenging circumstances such that the organization emerges from those conditions strengthened and more resourceful” (Vogus & Sutcliffe, 2007, p. 3418). Scholars have advanced arguments for

a wide of array of critical dimensions of organizational resilience. Consequently, there is little agreement about the concept of organizational resilience. One stream of research suggests that organizational resilience consists of three main dimensions. These are labeled situation awareness, management of keystone vulnerabilities, and adaptive capacity (e.g., McManus, Seville, Vargo, & Brunson, 2008; Stephenson, 2010; Stephenson, Vargo, & Seville, 2010). These dimensions are further divided into sub-categories which are in turn each measured by up to five indicators. While comprehensive, this approach results in a total of approximately 70 indicators designed to measure organizational resilience. Such a high number of indicators negatively impacts on the applicability of this conceptualization in research.

A second conceptualization proposed by Weick (1993) suggested that organizational resilience is comprised of bricolage, attitude of wisdom, and virtual role system. This concept was built upon by Mallak (1998) and the chosen indicators resulted in six factors labeled goal-directed solution-seeking, avoidance, critical understanding, role dependence, source reliance, and resource access. Although Mallak (1998) intended to assess organizational resilience, individuals were surveyed. The wording of the indicators (e.g., ‘enjoy improvising solutions to problems’) also suggested that the items were designed for individuals, rather than for organizations. This mixture of levels (i.e., individual vs. organizational) points to the difficulties that previous scholars have experienced trying to evaluate organizational resilience. Mallak’s (1998) six factors have been further applied by Somers (2009), but without the respective list of (individual) indicators. Somers developed one question for each of Mallak’s six factors to measure organizational resilience, but the limited number of items suggests oversimplification of measurement. Moreover, single-item measures cannot be tested for reliability.

A third concept has been proposed by Bruneau et al. (2003) who suggest that resilient systems should convey notions of both strength and flexibility. Their conceptualization of



resilience consists of four dimensions: robustness, redundancy, resourcefulness, and rapidity. These dimensions are described, but measurement items were not developed. These four factors have also been included in the conceptualization of community resilience by Norris et al. (2008). Notably, the aspect of resourcefulness has been applied in other studies (Mallak, 1998). The conceptualization of Bruneau et al. (2003) takes into account that a resilient system should display reduced failure probabilities, reduced consequences from failures, and reduced time to recovery.

Organizational resilience has been investigated in a number of sectors such as business and industry (Coutu, 2002; Gittell, Cameron, Lim, & Rivas, 2006), health (e.g., Mallak, 1998), and public administration (e.g., Somers, 2009). Additionally, the terrorist attacks of September 11, 2001 provided a setting to measure organizational resilience (Coutu, 2002; Gittell et al., 2006). The sport sector has been neglected within this research. However, previous studies can inform research on sport organizations. Empirical findings from New Zealand research have indicated that organizational resilience is higher in the health and community sector than in other sectors (Stephenson et al., 2010). Under the assumption that sport organizations are considered part of the health and community sector, the findings suggest potential for a high level of resilience among community sport clubs. Previous research has revealed a number of positive determinants of organizational resilience such as continuity of operations planning (Somers, 2009), effective preparation of employees (Coutu, 2002), as well as viable business models and financial reserves (Gittell et al., 2006).

In summary, empirical examination of organizational resilience is relatively scant, both for the sport sector and more generally. This shortcoming was identified by Vogus and Sutcliffe (2007, p. 3420) who stressed that, “Given the dearth of empirical work exploring resilience in organization theory, many (if not all) avenues are open for future research in resilience”. A plausible reason for this dearth of organizational resilience inquiry is that

researchers investigating resilience confront challenges concerning conceptualization, operationalization, and measurement (Rose, 2004). The current study contributes to empirical research on organizational resilience by focusing on community sport clubs.

### **Organizational resilience of community sport clubs**

Scholars sought to select one framework for investigating the organizational resilience of community sport clubs. The conceptualization of Bruneau et al. (2003) was selected for several reasons. First, other concepts such as the one advanced by Stephenson (2010) did not seem applicable because a couple of items in this concept started with ‘I’ suggesting the assessment of an individual. Consequently, the Stephenson approach has a tendency to conflate from individual to organizational resilience. The proposed indicators from Mallak (1998) suffered from a similar problem of individual-focused statements and, consequently, have not been applied to the current research. Second, a selection of indicators from the Stephenson (2010) conceptualization that were deemed relevant to the sport club context did not seem reasonable. The exclusion of some items would have resulted in an underassessment of some dimensions. The conceptualization of organizational resilience developed by Bruneau et al. (2003) was chosen because of its applicability and relevance to the sport club context. The four dimensions of organizational resilience and their relevance for this investigation of community sport clubs are detailed in the next paragraphs.

The first dimension in Bruneau et al.’s (2003) concept is robustness. It is defined as “the strength, or the ability of elements, systems, and other units of analysis to withstand a given level of stress or demand without suffering degradation or loss of function” (Bruneau et al., 2003, p. 737). In brief, robustness can be considered the ability to withstand stress. It is suggested that this is a key capability of sport clubs that exhibited qualities of resilience when struck by natural disasters. Sport clubs can be considered robust when they are still able to operate despite sport facilities and other infrastructure being rendered unserviceable or even

destroyed. Robustness also relates to what has been referred to as the dinosaur hypothesis suggesting that sport clubs are “not a threatened species” (Taks et al., 1999, p. 219). In fact, sport clubs have been able to change over time and adapt to changes in society (e.g., increased individualism) and in the sport system (e.g., rise of commercial sport providers, changes in sport policy). Thus, sport clubs have survived external threats and can be considered long-living organizations (Taks et al., 1999). Closures of clubs, particularly because of financial difficulties (i.e., bankruptcy), are rather unusual, although this can occur (Geckle, 2003). Previous research has also supported the notion that sport clubs are “economically resilient” (Taylor et al., 2009, p. 5) and viable (Wicker & Breuer, 2011), indicating that sport clubs in general tend to be robust organizations.

Second, redundancy is referred to as “the extent to which elements, systems, or other units of analysis exist that are substitutable, i.e., capable of satisfying functional requirements in the event of disruption, degradation, or loss of functionality” (Bruneau et al., 2003, p. 737). Redundancy reflects a sport club’s capability to substitute different resources to ensure the ongoing functioning of the club. Previous research has shown that sport clubs were able to provide substitutes when confronted with decreasing numbers of core volunteers. In the short term, secondary volunteers worked more, while the clubs tended to employ paid staff in the long term to fill the gap (Breuer, Wicker, & von Hanau, 2012). A separate study reported that sport clubs were able to substitute decreasing revenues in one category by increasing other income sources (Wicker, Breuer, & Hennigs, 2012). Consequently, a sport club’s redundancy can be considered a crucial capability, particularly in the aftermath of natural disasters when an array of human, financial, or infrastructure resources have to be replaced.

Third, resourcefulness is “the capacity to identify problems, establish priorities, and mobilize resources when conditions exist that threaten to disrupt some element, system, or other unit of analysis” (Bruneau et al., 2003, p. 737). It has been stressed that resources are

critical to resilience (Sapountzaki, 2007) because “resilience results from the processes and dynamics that create or retain resources” (Vogus & Sutcliffe, 2007, p. 3419). Resourcefulness is probably the most important dimension of organizational resilience because high levels of slack resources are critical to resilience (Schulman, 1993). Therefore, this dimension may represent a precondition of the three other dimensions. For example, with regard to redundancy, resources can only be substituted when they are available. Notably, the overall amount of resources available to a sport club is not necessarily critical to organizational resilience, but rather the organization’s capacity to deploy financial, cognitive, and relational resources in threatening situations (Vogus & Sutcliffe, 2007). For the concept of resilience, resourcefulness, i.e., the club’s general capability to deploy and mobilize resources is critical. Existing research on community sport clubs has alluded to resourcefulness through the investigation of revenue diversification (e.g., Wicker et al., 2012), but has not used the term resourcefulness explicitly nor examined all aspects of this dimension.

Importantly, this study distinguishes between resources and resourcefulness. In addition to resourcefulness, the resources available to community sport clubs are critical to recovery from the impact of natural disasters. Clubs may use various human resources (e.g., volunteers), financial resources (e.g., donations, subsidies), material resources (e.g., heavy equipment), and intangible resources (e.g., advice) during their recovery efforts. The importance of specific resources may differ between short-term and long-term recovery. While previous research has looked at various organizational resources and their contribution to the overall functioning of sport clubs (Wicker & Breuer, 2011, 2012), the use of resources after the impact of natural disasters has not yet been examined. This shortcoming is addressed by the second research question (what resources are critical to organizational recovery in the short-term and long-term?).

Fourth, rapidity is defined as “the capacity to meet priorities and achieve goals in a timely manner in order to contain losses and avoid future disruption” (Bruneau et al., 2003, p. 738). This capability is critical to resilience after natural disasters when facilities have been negatively impacted. Due to the sudden and often unpredictable occurrence of most natural disasters, planning is not really possible and the clubs need effective and efficient risk management. Previous literature on non-profit organizations in general and on sport clubs specifically has indicated that these organizations are not known for being efficient in terms of time and money (Hansmann, 1986; Wicker & Breuer, 2011). Moreover, the democratic structure of sport clubs (Horch, 1994) suggests that decision-making processes take longer than in their for-profit counterparts. However, previous research has shown that sport clubs were able to substitute both human and financial resources in a timely manner (Breuer et al., 2012; Wicker et al., 2012) and thus sport clubs were able to respond immediately to changes in their resource portfolios.

In summary, a sport club is considered resilient when it has the capability to mobilize a variety of resources (resourcefulness), to substitute missing resources (redundancy) in a timely manner (rapidity), and to be able to continue operating in crisis (robustness). It is therefore assumed that resilient clubs have recovered to a greater extent from the impact of natural disasters. This relationship between organizational resilience and recovery is captured in the third research question (to what extent does organizational resilience contribute to the overall recovery of community sport clubs?).

## **Method**

### **Research context: Community sport clubs in Queensland (Australia)**

Queensland is the second largest Australian state in terms of area and has approximately four million inhabitants. It is home to over 6,000 community sport clubs that are predominately managed and operated by volunteers. There is heterogeneity in club sizes,

structures, operations, and local government support. Clubs operate independently of State or local government and are often incorporated under the 1981 Associations Incorporations Act (Queensland Government, 2011b) which limits the personal liability of members. Most community sport clubs are affiliated with State Sporting Organizations, but operate in local communities using facilities (e.g., sport fields, sport halls, swimming pools) leased from local or state government and occasionally private enterprise. The local government often takes responsibility for the initial capital development of sport facilities to service the needs of the local community. The construction and ongoing maintenance of club room facilities and other capital improvements (e.g., goal posts, lighting playing areas) as well as the provision of sports equipment, machinery for maintenance (e.g., mowing and marking playing fields) and utilities is the responsibility of the community sport club.

### **Population and sampling**

The research into organizational resilience of sport clubs after the impact of natural disasters was funded by a grant from the Queensland Centre for Social Science Innovation. The data was collected using an online questionnaire administered to sport clubs in Queensland, Australia. Email addresses of sport clubs were collected through searching for sport clubs on the Internet as well as through obtaining referrals from sport and government organizations. The aim was to recruit both sport clubs that have been affected as well as clubs that were less likely to be affected by the natural disasters (as a control group) for the database. With regard to affected clubs, several government websites were searched to determine which local government areas were affected by the floods and cyclone and which clubs were impacted. In particular, the Department of Communities had a list of sport clubs that had been granted funding for disaster assistance (Queensland Government, 2011a).

For the sport clubs on this list, e-mail addresses were collected by searching the clubs' websites (if such a website existed), contacting the clubs by phone, or seeking support from

the local government office for each club. With regard to clubs that had (likely) not been affected, community directories (i.e., those mainly found on local government websites) were accessed. Although these clubs did not receive government funding after the disaster, it is still possible they were affected and may have received other support. This was not problematic because both groups of clubs received the same questionnaire. A total of  $n=739$  e-mail addresses were collected which consisted of  $n=448$  affected clubs that had received government funding, and  $n=291$  clubs that had not received funding.

### **Instrument**

The questionnaire consisted of 20 questions and was equivalent to seven pages in written form. It began with a set of questions assessing general club characteristics (e.g., year of foundation, sports provided; Table 1). In the second section the organizational resilience of sport clubs was assessed. The idea was to include the questions focused on the general resilience of the sport club before the questions about the impact of the disaster to avoid reference to the resilience in one specific disaster. As measurement items were not available for the four organizational resilience dimensions advanced by Bruneau et al. (2003), a set of items for robustness, redundancy, resourcefulness, and rapidity was developed by the research team members. Items were generated based on the operational definition for each dimension provided by Bruneau et al. (2003). Importance was placed on the general wording of each item because the specific response to the natural disasters was assessed separately. A total of five items were developed for robustness, redundancy, and rapidity, along with six items for resourcefulness. The items were measured on five-point Likert scales from 1=*not at all like our club* to 5=*very much like our club* (Table 2). Likert scales have previously been applied to research on community sport clubs (Lamprecht et al., 2011) and organizational resilience (Stephenson, 2010). The items were checked by community sport development

experts for face validity. Within the questionnaire, these resilience items were randomized using an online random list generator.

The third part of the questionnaire included questions about the impact of the natural disasters. The clubs were asked if they were affected by any of the natural disasters since June 2010. If the club had been affected, the respondent was asked to detail when the club was affected, and by which disaster (i.e., floods or cyclone). In instances in which a club had been impacted by multiple natural disasters, respondents were asked to indicate which one was the most severe. They were also asked to indicate the areas in which the club has been impacted by the natural disaster and the extent of impact on a four-point scale (from 0=*no impact* to 3=*severe impact*). Impact refers to the level of destruction, i.e., to what extent the club's assets were destroyed by the natural disaster. Moreover, the clubs were asked to indicate the extent to which the club made use of resources for short-term recovery (at the immediate time of the disaster and up until three months after the most severe disaster) as well as long-term recovery (beyond the three months after the most severe natural disaster). A list of potential resources was provided (e.g., club members, heavy equipment loaned or borrowed, financial resources of the club, State Government subsidies/grants) and clubs were asked to rate the extent of use on a four-point scale (from 0=*no use* to 3=*substantial use*). The threshold of three months was chosen to facilitate the clubs' answers by providing a concrete time frame.

The degrees of impact and resource use were assessed through soliciting respondent perceptions in order to ensure comparability across clubs. Using more objective measures would have been possible in select cases such as the amount of government grant money a club used for recovery. However, the amount of money may not have the same significance for all clubs: For example, while a \$10,000 government grant may assist some clubs to recover completely, this amount of financial support may not address many problems for



other clubs. Thus, objective measures could be problematic because of heterogeneity among clubs. Moreover, accurate responses to these measures may not be available in select instances (e.g., impact on facilities). Therefore, perceptive measures were chosen to address the comparability of clubs' responses. Meanwhile, the use of perception-based measures to assess degree of impact and resource use among respondents was consistent with the second section of the questionnaire in which clubs were asked to evaluate perceptions of the four organizational resilience dimensions. Finally, the objective measures outlined above could have required extensive time and effort on the part of respondents to answer accurately.

The questionnaire then assessed whether the club was currently operating and the extent to which club operations had recovered from the most severe natural disaster. The clubs were asked to estimate the extent of their club's recovery on a scale between 0 and 100 per cent. The following question was asked: “Compared to how your club was operating prior to the impact of the most severe natural disaster, please indicate the extent to which your club operations have recovered”. Thus, the measure refers to the operations of the club, i.e., to what percentage the club's programs, services, and other assets (e.g., facilities) have, in general, recovered.

Since this study was the first to examine organizational recovery from natural disasters, there are no existing measures that have been previously applied or tested. Therefore, a global measure of perception was used. Other possibilities of measurement would have been to assess the length of time being *out of order* or the difference in memberships or revenues before and after the natural disaster; however, issues may arise from their employment. For instance, some clubs may have never been out of order; they may have only operated at a reduced capacity. The assessment of memberships or revenues before and after the natural disaster is also problematic given the cross-sectional design of the study; panel studies are more useful for comparisons between two points of time. Also, clubs

generally report memberships and revenues on an annual basis. Thus, clubs could have been potentially impacted by the floods in January 2011, lost members and revenues due to operating at a reduced capacity for a couple of months, then regained members and revenues in the second half of the year. In this example, the differences in members or revenues would not be evident in the data because they may have been balanced out by the end of the year.

The final section of the questionnaire asked about club capacity (i.e., members, paid staff; Table 1). The questionnaire was pre-tested with several representatives of community sport clubs along with five researchers in community sport. After the pre-test, minor changes were made to the questionnaire to enhance the comprehensibility and readability of questions.

## **Procedure**

The questionnaire was made available online from 12 June 2012 to 8 August 2012. All 739 clubs received an invitation e-mail which included the purpose of the research, the link to the online survey, and advice about completing the survey. The clubs were instructed that the questionnaire would require approximately 15 minutes to complete, and they were invited to enter a prize draw upon completion. Ten sporting goods store gift vouchers each valued at AUD \$100 were randomly drawn from amongst the participating clubs. The prize draw was included to increase the response rate since providing an incentive can bolster the number of respondents (Bosjnak & Tuten, 2003). After clicking on the link, the clubs entered the first page of the survey. This page included the ethics statement which had to be acknowledged by the respondent prior to proceeding to the actual survey. When the response rate reached a plateau, a reminder was sent to all clubs that had not yet clicked on the link. A total of two reminders were sent during the survey period, which contributed to a slight increase in the response rate. One week before the end of the survey, a research assistant was employed to call clubs via phone and invite them to participate in the survey. In total  $n=200$  sport clubs completed the survey for a response rate of 27.1%.

## Data analysis

The data analysis consisted of three main steps. First, the data were checked for content validity and plausibility. Implausible values were set to missing values. Given the relatively low response rate compared with other sport club studies (Lamprecht et al., 2011; Wicker & Breuer, 2012), the data were also checked for non-response bias (for an overview see Jordan, Walker, Kent, & Inoue, 2011). Since the researchers were unable to contact non-responding clubs, a comparison of early to late respondents was undertaken using *days to respond* as an independent regression variable. The underlying assumption is that late respondents are similar to non-respondents (Jordan et al., 2011). The results show that the club characteristics did not differ significantly depending on the *days to respond*. No significant differences were found regarding the number of members in the club ( $p=.433$ ), the age of the club ( $p=.722$ ), and the extent of recovery of the club ( $p=.807$ ) indicating that non-response bias may not be an issue.

Altogether, 81.9% of the responding clubs indicated the club had been affected by a natural disaster. Therefore, potential structural differences in terms of the number of members and the number of years the club has been established (i.e., club's age) between these clubs and non-affected clubs were examined. The results of a *t*-test indicated no significant differences concerning the number of members ( $p=.399$ ) and the clubs' age ( $p=.111$ ). Descriptive statistics were provided to give information about the sample characteristics and the organizational resilience of affected clubs, the impact of the natural disasters, and the resources used for short-term and long-term recovery. Using the total means for the dimensions robustness, redundancy, resourcefulness, and rapidity, paired samples *t*-tests were calculated to analyze whether clubs scored significantly higher on some dimensions than on other dimensions (and to answer the first research question). *T*-tests were calculated pair wise. Moreover, paired samples *t*-tests were calculated to test for significant differences in

resource use between short-term and long-term recovery (and to answer the second research question). Similarly, pair wise comparisons between short-term and long-term recovery were made for all 14 resources. Since there was the possibility of inflating Type I error, the probability of error was adjusted to  $p < .007$ . This adjusted  $p$ -value was obtained by dividing the level of significance ( $\alpha = .1$ ) by the number of items tested (14).

In a second step, the organizational resilience scale was checked for reliability and validity. The reliability test revealed high reliability scores for the overall resilience construct ( $\alpha = .944$ ) and for the dimensions robustness ( $\alpha = .868$ ), redundancy ( $\alpha = .767$ ), resourcefulness ( $\alpha = .803$ ), and rapidity ( $\alpha = .860$ ; Table 2). The reliability estimates can be considered acceptable given the suggested threshold of .7 (Nunnally & Bernstein, 1994). Most of the Pearson correlations between the 21 resilience items were  $> .3$  supporting the employment of an exploratory factor analysis (EFA; Tabachnick & Fidell, 2007). EFA was performed using SPSS Maximum Likelihood extraction and oblique (direct Oblimin) rotation. Although the EFA resulted in four factors, the results did not support the four dimensions of the concept as many items loaded on the first factor and a number of cross-loadings were observed. This was interpreted as an indication that the four dimensions were not as selective as conceptualized. It was therefore decided to not move forward based on the EFA results<sup>1</sup> because of their limited added value. Nevertheless, the outcome of the EFA was considered and a resilience index was calculated that represents the overall resilience of sport clubs. Thus, one measure for resilience was used to reflect the outcome of the EFA. The index was obtained by adding up the 21 resilience items (Table 2) and rescaling to a range between 0 and 100 (Table 1).

In a third step, linear regression analyses were carried out to ascertain the contribution of organizational resilience to the extent of organizational recovery (and to answer the third

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<sup>1</sup> The EFA results are available from the authors on request.

research question). The variable *recovery* served as the dependent variable and the resilience index was entered as an independent variable alongside a set of control variables (Table 1). Selected control variables were included in the regression analyses to analyze whether organizational resilience still influences recovery when controlling for other variables that could also determine recovery and potentially overlap the resilience effect. The variable *government grant* reflects the fact that the Queensland Government (2011a) had provided financial support for many community sport clubs and therefore evaluated whether clubs that used such grants had higher recovery levels. Also, the recovery may be determined by the severity of the impact that the natural disaster had on the club because more severely impacted clubs may have recovered less quickly. The overall recovery may also be a function of time which was measured by the number of months since the occurrence of the most severe disaster (*months*). Since clubs could have potentially been affected by different types of disasters at different points in time, it could be that clubs impacted earlier were more fully recovered simply because the earlier occurrence of the natural disaster afforded more time to recover. The regression analyses also controlled for club characteristics such as the number of members, the club's age, and whether the club employed paid staff.

Two regression models were estimated which only differ in the number of independent variables. Model 1 included all control variables except for the types of sports. Model 2 included the types of sports (dummy coded) to control for unobserved club heterogeneity (e.g., structure of sport, facility use, rules and regulations) and to test for significant differences among sports with regard to overall recovery. The independent variables were checked for multicollinearity. Since all correlation coefficients were below .9 (Tabachnick & Fidell, 2007) and all variance inflation factors below 10 (Hair, Black, & Babin, 2006) there should be no multicollinearity issues in the models. Regression models

with robust standard errors (MacKinnon & White, 1985) are estimated to control for heteroscedasticity. An  $\alpha$ -level of .1 was used for all statistical tests.

## Results

### Sample characteristics

An overview of the sample characteristics is provided in Table 1. These characteristics reveal that the affected clubs had been in operation for a mean of 47 years ( $SD=32.11$ ) and had 383 members on average. However, this mean value is biased by a few clubs with many members since 66.4% of the clubs have 200 members or less. Altogether, 26.7% of the affected clubs employ paid staff. Most clubs were football (22.3%), equestrian (12.9%), cricket (11.5%), ball sports, or golf clubs (both 9.4%). With regard to natural disasters, 95.7% of the clubs were affected by floods and 15.0% by the cyclone. On average, clubs were affected by 1.53 natural disasters from June 2010 onwards ( $SD=.87$ ). The most severe natural disaster affected the clubs 17.5 months before the survey and had an impact of 1.68 on a four-point scale (from 0=nil impact to 3=severe impact). The clubs estimated that they had recovered 82.7% on average ( $SD=23.05$ ; Table 1). While half of the affected clubs had recovered at least 90%, 6.1% had recovered only 30%. Altogether, 98.5% of the affected clubs (that participated in the survey) were currently operating.

### Organizational resilience

The organizational resilience of community sport clubs is presented in Table 2. Clubs scored on average highest on rapidity ( $M=3.67$ ), followed by robustness ( $M=3.61$ ), resourcefulness ( $M=3.47$ ), and redundancy ( $M=3.05$ ). A statistical comparison of the dimension means (total means) supports that all differences are statistically significant ( $p<.1$ ), except for the comparison of robustness with rapidity ( $p=.142$ ). This means that clubs scored significantly lower on redundancy compared with the other dimensions rapidity, robustness, and resourcefulness. The relatively low total mean for redundancy results from the two

indicators with the lowest mean values across dimensions. Clubs reported that they had a low capability across several areas. These included using other facilities when their own facilities could not be used ( $M=2.26$ ), substituting equipment when their own equipment could not be used ( $M=2.66$ ), and being capable of substituting volunteers across positions (Table 2).

### **Impacted assets and resources used for recovery**

An overview of the impacted assets and programs in clubs and the resources clubs used for short-term and long-term recovery is provided in Table 3. The mean values revealed that outdoor sport facilities were the most affected asset ( $M=2.59$ ), followed by the provision of sport programs ( $M=2.04$ ), club assets and other equipment ( $M=1.93$ ), sport equipment ( $M=1.92$ ), and other club facilities such as parking ( $M=1.85$ ). Clubs used several resources to help them in their short-term recovery effort which was defined as the period up until three months after the occurrence of the most severe disaster. Clubs mainly used human resources such as club members ( $M=2.51$ ) and the volunteer workforce in the club ( $M=2.37$ ). Financial resources of the club ( $M=2.11$ ) and subsidies or grants from the State Government ( $M=2.10$ ) were the next most utilized resources in short-term recovery. Heavy equipment, assistance or grants from sport organizations as well as funds from insurance policies were reported as being used minimally.

Within long-term recovery, similar human resources (i.e., club members, volunteer workforce from within the club) and financial resources (i.e., financial resources of the club, State Government subsidies/grants) were of highest importance and were ranked among the top four resources. Interestingly, the local council increased in *relative* importance during this period. The local council was ranked seventh in the short term and moved up to fifth ranking in the long term. The results of the *t*-test showed that half of the resources were significantly less utilized during the long-term than during the short-term recovery ( $p<.007$ ). This demonstrates that a number of resources were utilized significantly less from short-term to

long-term. These resources included club members, financial resources of the club, State Government subsidies/grants, manpower/help from other people/institutions in the community, heavy equipment loaned or borrowed, donations from non-members, and the State Emergency Service (Table 3).

### **Determinants of overall recovery**

The regression results are summarized in Table 4. They highlight relative recovery across club type and characteristics. In other words, they show what factors influenced the overall recovery of sport clubs. In Model 1, the variables *resilience*, *impact*, *months*, and *members* significantly influence the overall recovery of sport clubs. While the variables *resilience*, *months*, and *members* have a positive effect, the variable *impact* has a negative influence on the dependent variable. This finding indicates that sport clubs that scored higher on the organizational resilience index, had more members, had more months to recover from the natural disaster, and experienced a less severe impact were predicted by the regression model to have recovered to a greater extent. The unstandardized coefficient of *months* reveals that sport clubs have recovered 3.7% per month. The  $R^2$  shows that the first regression model explains 17.2% of the variation in perceived organizational recovery.

Model 2 includes the types of sports. The results demonstrate that organizational resilience and the average severity of the impact still have a significant effect on overall organizational recovery. Thus, the second model supports the statistical robustness of these effects. However, the variables *months* and *members* which were significant predictors in Model 1 were not significant in Model 2. This finding suggests that these variables were explaining variance shared with the types of sports. In contrast, the effect of the variable *government grant* is significant. Clubs that received a government grant or subsidy within the first three months of being impacted by a natural disaster had recovered significantly better than clubs that had not received direct financial support in the form of a government grant.



Interestingly, motor sports, equestrian, and golf clubs reported significantly less recovery since the impact of the natural disaster.

All else constant, the unstandardized coefficients indicate that motor sports clubs recovered 46.5% less compared with other clubs, equestrian clubs 21.0%, and golf clubs 14.2%. Bowling clubs have recovered 27.0% less and thus have the second lowest recovery score; however, the effect is not statistically significant. One reason for the non-significance of this effect could be that only 2.9% of the clubs in the survey provide bowling or lawn bowls leading to insufficient variation in the variable. The second regression model explains 39.2% of the variation in organizational recovery. The greater explained variance ( $R^2$ ) in Model 2 compared to Model 1 can be traced back to the inclusion of the types of sports as dummy variables. Thus, differences among sports that are not captured by the other control variables in the regression account for an increase in explained variance by 22% (Table 4).

## Discussion

This study examined organizational resilience of community sport clubs in the aftermath of natural disasters. Organizational resilience was found to be relatively high among sport clubs as indicated by the average score on the 100 point resilience index ( $M=61.3$ ). Out of the four resilience dimensions, sport clubs considered themselves to be extremely rapid ( $M=3.67$ ) and robust ( $M=3.61$ ). Clubs stated that they would have great capacity to cope with challenges and would be able to act in a timely manner when a disaster strikes. These findings seem to be supported by the fact that they have recovered to approximately 83% of their pre-disaster function within 17 months. While sport clubs do not regard it as crucial to rely on other facilities and equipment as indicated by the low scores on these items, redundancy still scores high on the scale ( $M=3.05$ ). Clubs seem to have the capability to substitute human and financial resources to some extent, a finding that is consistent with previous research (Breuer et al., 2012; Wicker et al., 2012). It seems that

redundancy probably has immediacy when a natural disaster occurs. Yet, as clubs perceive themselves as being very rapid and robust, redundancy is probably less necessary or could be less of an option. Clubs see themselves as being highly resourceful, particularly with regard to identifying problems and prioritizing tasks during unexpected events. This study confirms previous research suggesting that resources are critical to the concept of resilience (Mallak, 1998) and that community sport clubs are resilient organizations (Taylor et al., 2009).

Several assets of sport clubs were impacted by natural disasters. The relatively high average score for the impact the disaster had on the clubs' outdoor sport facilities ( $M=2.59$ ) shows that natural disasters can lead to severe impacts, even though these events tend to occur quite infrequently. Therefore, it can be useful for clubs in geographic locations that are prone to natural disaster risks (i.e., cyclone and flood prone areas) to be resilient and able to deal with the impact of natural disasters. The provision of sport programs was revealed as the second highest affected asset. This is likely attributable to impacted sport facilities since some programs cannot be provided when facilities are either destroyed or severely damaged. Both general assets and sport-specific equipment were found to be impacted by disasters. This may represent a problem for clubs that provide sports which rely heavily on specific sport facilities and equipment such as equestrian and bowling.

Sport clubs used various resources in their recovery efforts. Club members and the volunteer workforce were the resources that were used most. This finding is in accordance with previous research suggesting that human resources and the capacity to mobilize members and volunteers are critical to the overall functioning of a sport club (Misener & Doherty, 2009; Wicker & Breuer, 2012). This capacity may be even more important when recovering from the impact of natural disasters. Financial resources in general and specifically State Government subsidies/grants were also heavily used by clubs. Although the maximization of revenues is not the primary aim of non-profit organizations, having

sufficient financial resources is critical to their survival (Wicker & Breuer, 2012) and financial reserves may represent a buffer in the case of natural disasters (Gittell et al., 2006). The use of government subsidies can be supported by previous research suggesting that this income source is critical to the longevity of clubs, although it may only comprise approximately 10% of the total revenues (Breuer & Wicker, 2009). However, the prompt provision of government subsidies seems to help clubs recover from natural disasters.

Several factors had an influence on overall recovery of sport clubs from natural disasters. Organizational resilience as conceptualized in this study was found to have a significant positive influence on overall recovery meaning that sport clubs with higher levels of robustness, redundancy, resourcefulness, and rapidity are likely to recover more quickly and more fully from the impact of natural disasters. Not surprisingly, clubs that were impacted less severely and had more time to recover showed significantly higher levels of recovery. This result seems plausible and shows that sport clubs are viable organizations (Wicker & Breuer, 2011) that recover over time. This assumption is supported by the finding that 98% of the clubs which responded to the survey were currently operating.

The regression results revealed a significant club size effect: larger sport clubs (in terms of members) had reportedly recovered to a significantly greater extent than smaller clubs. This finding is supported by previous research showing that larger sport clubs are more effective (Koski, 1995). Thus, larger clubs have some advantages in recovery, likely due to having access to more human (e.g., volunteers) and financial resources (e.g., total revenues; Wicker & Breuer, 2012). These advantages are not always evident because larger clubs may also suffer from heterogeneous interests among members (Wicker & Breuer, 2012); however, it seems that in the aftermath of a natural disaster all members pursue the goal of rebuilding the club. Moreover, clubs that utilized government grants to a greater extent had higher recovery levels than those clubs that were unable to utilize government grants to the same

extent. Thus, government grants seem to be a critical resource in the recovery from natural disasters. Importantly, this income source is associated with low financial risk (Kingma, 1993). The positive effects of members and government grants seem plausible since these were among the most utilized resources in the clubs' short-term and long-term recovery efforts.

The overall recovery of sport clubs was influenced by the type of sports. The difference in explained variance between Model 1 (without sports) and Model 2 (sports included) further supports the importance of the type of sport in explaining organizational recovery. Thus, additional distinguishing factors appear to be inherent to specific sports. One approach to detect these factors could be an investigation of potential similarities among motor sports, equestrian, and golf clubs. These clubs typically use outdoor sport facilities extensively since particular race tracks are needed for motor sports, specific courses or fields for equestrian, and large tracts of highly maintained land for golf. Typically, these facilities are sport-specific and cannot be used by other sports, compared with a swimming facility (water sports) that can be used by clubs for swimming, water polo, diving, and triathlon, while also used by the general public. Potentially these three types of sports were more susceptible to the impact of natural disasters, an assumption that is supported by the generally high impact score for outdoor sport facilities. Another aspect to consider is facility ownership and the associated responsibility for reconstruction when impacted by a natural disaster. It is likely that sport facilities in motor sports, equestrian, and golf are owned by the club, as opposed to swimming facilities that are often owned and operated by local government or for-profit businesses. Local government and private enterprises may have an interest in renovating damaged facilities, while the other facilities have to be renovated or rebuilt by the clubs themselves. Facility ownership could thus contribute to the explanation of organizational recovery and to the observed increase in the share of explained variance.

This study has implications for the management of community sport clubs and for national or state sport organizations. First, understanding that clubs relying on government grants have recovered more thoroughly, it can be recommended that clubs should be more proactive in pursuing government grants. Second, they should also consider other external funding opportunities such as funds from insurance policies, since responding clubs indicated infrequently using this resource during their recovery. Having suitable insurance covering the areas that are likely to be most impacted (e.g., outdoor sport facilities) may be one step towards recovery from natural disasters. Third, given that sport clubs reported that they had rarely, if at all, accessed money or advice from national or state sport organizations and under the assumption that clubs would have used them if available, it can be recommended that national and state sport organizations become more prepared to assist clubs in the event of a natural disaster. Their support may be critical in motor sports, equestrian, and golf where clubs have recovered to a significantly lower extent than other sport clubs.

Fourth, the clubs scored relatively low on redundancy compared with the other resilience dimensions suggesting that clubs do not have contingency plans in place, or that they are limited in substituting resources and people within the club. It can therefore be recommended that clubs work on the substitutability of resources. With regard to human resources, one approach could be to have written job descriptions or manuals that explain critical procedures (Schulz & Auld, 2006; Warner, Newland, & Green, 2011) making the organization less dependent on the specific person performing the role. In terms of financial resources, sport clubs should try to diversify their income portfolio, e.g., by making more use of donations from non-members or sponsorship income. Concerning facilities and equipment, sport clubs may consider forming relationships with other institutions in the community that allow access to alternative facilities, while their usual facilities are being repaired. Such inter-organizational relationships should improve the redundancy of resources.

## **Conclusion**

This study explored the organizational resilience among community sport clubs in the aftermath of natural disasters, specifically major cyclone and flood events. In addition, the current research investigated the impact of natural disasters, the resources used by clubs in their recovery efforts, and the predictors of overall recovery. A sample of community sport clubs in Queensland, Australia, has been used as this region includes many clubs which were impacted by natural disasters in 2010 and 2011. The concept of organizational resilience, encompassing robustness, redundancy, resourcefulness, and rapidity has been applied to community sport clubs.

Limitations for this research should be acknowledged, and addressing these limitations may represent avenues for future research. First, the sample size is relatively small and the response rate is relatively low compared with other quantitative sport club studies (e.g., Lamprecht et al., 2011; Taylor et al., 2009; Wicker & Breuer, 2011). Nevertheless, the response rate is higher than in previous research on organizational resilience (Stephenson, 2010). One explanation for the small sample size is that affected clubs were necessary for this study, and these clubs were difficult to identify since most natural disasters occur within a limited geographic location, and not all sport clubs within a particular region will be impacted. Another reason may be that some clubs were not interested in completing the questionnaire after recovering from the disaster. Moreover, it is unclear how many clubs have not responded because they have not recovered at all and have shut down operations permanently.

The second limitation encompasses the measurement and validity of the organizational resilience scale. This study was exploratory in nature, and represents initial quantitative assessment of organizational resilience. The research team attempted to develop a preliminary organizational resilience scale using a number of organizational items. While

the conceptualization was based on sound theory, the measurement introduced a number of challenges. Such challenges have also been identified in previous studies on resilience (e.g., Mallak, 1998; Paton et al., 2001; Tobin & Whiteford, 2002). The exploratory factor analysis demonstrated that further testing and item development is necessary. Future research should extend this preliminary conceptualization and measure organizational resilience using a larger sample. The design of more advanced measures for organizational recovery should also be addressed in future studies. Qualitative data collection via interviews with club managers, as well as focus groups with club staff and volunteers, would be helpful to inform scale development and further investigate the reasons for the different recovery levels among sport clubs. It would also be worthwhile to further investigate the role of insurance funds as this resource was not heavily used by clubs in this study, but could reflect a critical tool for recovery. Furthermore, a case study approach can be applied to compare sport clubs that have been successful in recovering from a natural disaster to less successful clubs and develop an understanding of contemporary best practices and benchmarks. Another avenue for future research would be to include the geographic location of the clubs in the analysis.

Third, this study is limited to flood and cyclone events. Other natural disasters such as bush or forest fires, earthquakes, or tsunamis could potentially impact on sport clubs' assets and operations and need to be considered, where relevant, in planning for organizational resilience and recovery. Fourth, this study only used cross-sectional data. Future studies should collect longitudinal data to evaluate resilience among community sport clubs over time and to investigate how the concept and its dimensions evolve as time from the natural disaster passes and changes in personnel and resources may occur.

This study showed that community sport clubs were highly resilient and recovered to a great extent from the impact of natural disasters. Clubs were found to be robust, rapid, and resourceful organizations with room for improvement in terms of redundancy of resources. In

their recovery efforts, they relied heavily on human resources (i.e., club members and volunteers) and financial resources (i.e., own resources and government grants). Clubs providing motor sports, equestrian, or golf have recovered to a significantly lower extent than clubs providing other sports. Since sport clubs in almost any part of the world can be impacted by natural disasters which often arrive without warning, sport organizations and sport managers should be aware of the importance of organizational resilience and specific resources such as government grants that are critical to facilitate recovery from natural disasters.



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**Table 1:** Sample characteristics (affected clubs)

Variable	Description	Scale	Mean	SD
Recovery	Extent to which the club has recovered from the impact of the most severe natural disaster (in %)	Metric	82.70	23.05
Resilience	Resilience index; comprised of 21 resilience items (Table 2) and normalized to 0-100	Metric	61.26	20.29
Impact	Average degree of impact by disaster (from 0= <i>nil impact</i> to 3= <i>severe impact</i> )	Ordinal	1.68	.82
Months	Number of months since most severe natural disaster	Metric	17.53	.90
Government grant	Extent to what the club used government subsidies/grants in the short-term recovery (from 0= <i>did not use</i> to 3= <i>substantial use</i> )	Ordinal	2.10	1.13
Members	Number of members in 2011	Metric	383.12	777.07
Age	Age of club (in years)	Metric	47.07	32.11
% of clubs				
Paid staff	Club employs paid staff (1= <i>yes</i> )	Dummy	26.7	
Motor sports	Motor sports incl. motocross, motorcycle, mud racing, kart racing (1= <i>yes</i> )	Dummy	5.8	
Football	Football, touch football, rugby, soccer (1= <i>yes</i> )	Dummy	22.3	
Boat sports	Boat sports incl. dragon boat, paddling, rowing, canoe (1= <i>yes</i> )	Dummy	5.0	
Ball sports	Ball sports incl. basketball, netball, and baseball (1= <i>yes</i> )	Dummy	9.4	
Shooting	Shooting incl. target rifle shooting, archery, clay target shooting, pistol shooting (1= <i>yes</i> )	Dummy	7.9	
Water sports	Water sports incl. swimming, diving, water polo (1= <i>yes</i> )	Dummy	3.6	
Equestrian	Equestrian incl. dressage, show jumping, cross country, polo cross etc. (1= <i>yes</i> )	Dummy	12.9	
Athletics	Athletics, track and field, running/walking (1= <i>yes</i> )	Dummy	5.0	
Cycling	Cycling incl. road cycling, BMX, mountain biking, cross country (1= <i>yes</i> )	Dummy	3.6	
Cricket	Cricket (1= <i>yes</i> )	Dummy	11.5	
Hockey	Field hockey (1= <i>yes</i> )	Dummy	3.6	
Bowling	Bowling and lawn bowls (1= <i>yes</i> )	Dummy	2.9	
Golf	Golf (1= <i>yes</i> )	Dummy	9.4	
Other	Other sports incl. skydiving, firearm practice, roller derby, karate, tennis, darts, fishing, croquet, ice sport, gymnastics, calisthenics, trampoline (1= <i>yes</i> )	Dummy	10.1	

**Table 2:** Organizational resilience scale (affected clubs)

Dimension	Our club has the capability to ...	Mean	SD	Total Mean (SD)	Cronbach's $\alpha$
Robustness	cope with the impact of unexpected incidents	3.46	1.24	3.61 (.92)	.868
	withstand external pressures	3.62	1.12		
	cope with challenges	4.04	.98		
	withstand stress without losing focus	3.76	.99		
	continue to deliver its services during unexpected events	3.17	1.30		
Redundancy	use other facilities when its own facilities cannot be used	2.26	1.40	3.05 (.95)	.767
	re-allocate resources within the club	3.74	1.14		
	substitute volunteers across positions	3.16	1.43		
	substitute equipment when its own equipment cannot be used	2.66	1.38		
	employ alternative options to sustain operations during unexpected events	3.41	1.22		
Resourcefulness	prioritize tasks during unexpected events	4.04	.99	3.47 (.83)	.803
	generate revenue from multiple sources	2.82	1.33		
	mobilize resources during unexpected events	3.41	1.23		
	employ sufficient back up resources to sustain operations during unexpected events	3.16	1.24		
	identify problems during unexpected events	4.00	.92		
	acquire support from other organizations when needed	3.36	1.23		
Rapidity	achieve goals in a timely manner	3.95	1.06	3.67 (.88)	.860
	adapt quickly to changing circumstances	3.75	1.10		
	meet priorities in a timely manner	3.84	1.04		
	restore services quickly during unexpected events	3.32	1.20		
	respond quickly to disruptive events	3.51	1.11		

\*Note: The scale is from 1=*not at all like our club* to 5=*very much like our club*.



**Table 3:** Impacted assets and resources used for short-term and long-term recovery (in descending order)

Variable	Mean	SD			
<b>Impacted asset</b>					
Outdoor sport facilities	2.59	.81			
Provision of sport programs	2.04	1.13			
Club assets and other equipment (e.g., fridges, mowers etc.)	1.93	1.19			
Sport equipment	1.92	1.20			
Other club facilities (e.g., parking)	1.85	1.22			
Club house	1.57	1.31			
Bar, kitchen, and dining facilities	1.34	1.35			
Change rooms and toilets	1.31	1.35			
Indoor sport facilities	.55	1.10			
	<b>Short-term</b>		<b>Long-term</b>		
<b>Resources used</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>t</b>
Club members	2.51	.82	2.21	1.01	3.729*
Volunteer workforce from within the club	2.37	.91	2.14	1.05	2.490
Financial resources of the club	2.11	.907	1.86	1.01	3.451*
State Government subsidies/grants	2.10	1.13	1.58	1.25	5.104*
Manpower/help from other people/institutions in the community	1.27	1.06	.74	1.02	5.794*
Heavy equipment loaned or borrowed	1.13	1.10	.72	1.04	5.042*
Local council	1.06	1.12	1.02	1.11	.737
Grants from National or State Sport Organizations	.92	1.23	.79	1.11	1.721
Heavy equipment rented	.80	1.10	.65	1.03	1.506
Donations from non-members	.79	1.10	.55	.93	3.503*
Assistance/advice from National or State Sport Organizations	.69	.99	.58	1.00	1.904
Financial resources from members (e.g., additional member levies)	.51	.91	.49	.90	.427
Funds from insurance policies	.45	.90	.32	.79	2.406
State Emergency Service	.15	.43	.01	.09	3.842*

*Note:* Items were assessed on four-point scales; impacted area (from 0=no impact to 3=severe impact); resources used (from 0=did not use to 3=substantial use). Short-term: up until three months after the most severe disaster; long-term: beyond the three months after the most severe natural disaster. \* $p < .007$  (= .1/14 to adjust for Type I error).

**Table 4:** Summary of regression results for organizational recovery

Variable	Organizational recovery	
	Model 1	Model 2
Constant	8.240 (.251)	56.376 (1.417)
Resilience	.272 (2.448)**	.225 (2.3223)**
Impact	-6.831 (-2.733)***	-7.306 (-2.869)***
Months	3.739 (2.119)*	1.570 (.674)
Government grant	2.056 (1.354)	3.069 (1.830)*
Members	.006 (2.997)***	.004 (1.034)
Age	-.005 (-.101)	.032 (.377)
Paid staff	-6.787 (-1.445)	-5.538 (-1.019)
Motor sports	/	-46.499 (-3.585)***
Football	/	-4.824 (-.837)
Boat sports	/	-9.079 (-.544)
Ball sports	/	-1.019 (-.154)
Shooting	/	-8.846 (-1.230)
Water sports	/	-4.507 (-.575)
Equestrian	/	-21.046 (-2.525)**
Athletics	/	5.221 (.767)
Cycling	/	2.830 (.284)
Cricket	/	-4.975 (-.710)
Hockey	/	-.026 (-.003)
Bowling	/	-26.962 (-1.110)
Golf	/	-14.165 (-1.707)*
$R^2$	.172	.392
$F$	3.940	3.076
$p$	.001***	<.001***

Note: \* $p < .1$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ ; displayed are the unstandardized coefficients ( $t$ -values in parentheses); robust standard errors (MacKinnon & White, 1985) are reported.