The purpose of this study was to examine the National Football League betting market efficiency in conjunction with rest days and team performance from the 2002 to 2012 season. The sports wagering markets have been identified as an alternate source for testing the efficient market hypothesis (EMH), defined that there is no certain profitable strategy with the point spreads (Osborne, 2001). In other words, the rate of return is below zero with publicly available information after sports bookmakers’ commission (Zuber, Gandar, & Bowers, 1985). Thus, all publicly available information should be contained in the point spreads.

Sports team coaches complain at times about their game schedules in relation to their teams’ rest days. The main reason for this complaint is that rest or lack of is expected to influence player performance as well as team performance. The Buffalo Bills, as an example, were concerned about their game schedules prior to the 2013 season. This complaint is based on a potential disadvantage to the Bills (Florio, 2013) in terms of their shorter rest days compared to the opponents; five of their opponents in that season were scheduled to play the Bills after a bye, which means one week off during the season. The Bills’ concern is supported by previous researchers (Entine & Small, 2007; Ibáñez et al., 2009; Ispirlidis et al., 2008; Picazo-Tadeo & González-Gómez’s, 2010; Montgomery et al., 2008; Scoppa, 2013; Spencer et al., 2005) whose findings demonstrate that rest, fatigue, and team performance would be interrelated. Thus, the point spreads in the NFL wagering markets should contain the relationship between rest, fatigue, and team performance based on the EMH, which is publicly available information.

Although NFL teams usually play on a weekly basis, they have had the Thursday Night Football games since 2006. Teams sometimes play on Sunday, and then on Thursday, which gives them a short break (3 days). After that, most teams play next Sunday, which indicates a 10-day break. NFL teams also have an additional week off, which is called a bye. This indicates that NFL teams enjoy a long break that would positively influence athletic performance as well as team performance. If the NFL betting market is efficient, this potential impact of each rest interval in the NFL should be reflected in the point spreads.

To test a possible pattern caused by rest days in the NFL betting market, the data were collected from sportsinsights.com, Computer Sporting World, and covers.com from the 2002 to the 2012 season. This study employed non-parametric binomial tests, t-tests, and Analysis of Variance (ANOVA). ANOVA was conducted to see if there were mean differences in the covering percentage of a team against point spreads, depending on differential rest days. Non-parametric tests were conducted to see how many times home/away teams and favorites/underdogs covered the spread, depending on how many more/fewer rest days the teams had compared to their opponents. Lastly, t-tests were conducted for forecast errors (i.e., differences between the point spreads and actual score differences) to see how forecast errors were different from zero and changed depending on differential rest days between two teams.

The first finding of this study is that favorites with more (fewer) days off covered the spreads more (less) often. Particularly, favorites’ and away favorites’ covering percentages against the spreads increased as they had more rest days, and wagering on these teams were profitable. Home favorites also covered the spreads more (less) often when they had a longer (shorter) break although they were not significant. This means that there was a particular pattern in relation to a team’s relative strength and rest days, and the bookmakers would not fully capture this pattern. Another interesting finding is that the average of forecast errors increased as the difference in rest days between favorites and underdogs became greater. This result shows that the predictability of the spreads for future outcomes would decrease as a team’s rest days became greater than its opponent. Lastly, this study confirmed that favorites and away favorites were profitable after their bye week, regardless of whether both teams or only one team came off a bye. This implies that the effect of bye weeks on team performance did not seem to be specified by the bookmakers, implying that the bookmakers would overlook the effect of bye weeks on the performance of good teams. Therefore, the violation of the EMH found by Sung and Tainsky (2014) was still consistent.
In conclusion, this study found some degree of market inefficiency in the NFL betting market and a certain trend in forecast errors regarding teams’ rest days. There are some possible explanations in term of the findings. First, it is possible that NFL teams would be differentially influenced by rest intervals scheduled by the league office. Similar to Ashman et al.’s (2010) finding that home underdogs in particular performed worse when playing back-to-back games in the National Basketball Association, the impact of rest days on team performance in the NFL would be differential depending on a team’s relative quality. It is also possible that the result of the present study would be caused by the dual roles of sports bookmakers. Previous researcher found that the bookmakers balance the wagers on each side of a bet (Summers, 2008), or intentionally publish biased betting lines to maximize profits (Borghesi, 2008). Accordingly, this study provides two suggestions for future research based on the aforementioned explanations. The first potential topic is whether team performance would change in conjunction with rest days and team quality in the NFL. The second topic is whether the bias detected in the current study would be caused by either of the two bookmakers’ roles. Therefore, researchers can obtain answers with these two potential research topics in terms of why the pattern of the current study would occur in the NFL.