ORIGINAL RESEARCH

The Finnish Canine Stifle Index: responsiveness to change and intertester reliability

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Introduction

The Finnish Canine Stifle Index (FCSI) is a testing battery, composed of several individual items, that was developed as an outcome measure for assessing dogs' level of stifle function. Although the individual items comprising the testing battery have been validated previously, the responsiveness and reliability of the FCSI as a whole have not yet been tested.

Therefore, the aim of this study was to assess the FCSI's responsiveness to changes in stifle function and its intertester reliability. A secondary aim was to determine a cut-off value to differentiate between compromised and severely compromised stifle function.

Approach

A total of 29 dogs with any stifle dysfunction (STIF), 17 dogs with a musculoskeletal disease other than stifle dysfunction (OTHER) and 11 control dogs with no musculoskeletal disease (CTRL) were enrolled in the study. At the time of enrolment, all dogs underwent an orthopaedic examination by a physiotherapist and were tested using the FCSI (scored from 0 to 263). The dogs were then retested by the same physiotherapist six and 10 weeks later. In addition, another physiotherapist also performed the test at one of the three evaluations.

The responsiveness of the FCSI was

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KEY FINDINGS

- The Finnish Canine Stifle Index was found to be responsive to changes in stifle function and have good intertester reliability.
- A cut-off value of 120 differentiated between compromised and severely compromised stifle function with 83 per cent sensitivity and 89 per cent specificity.

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evaluated using a linear mixed-effects model for repeated measures. Between-group and within-group comparisons were estimated from this model using contrasts. Intertester reliability was then assessed using a random-effects model to calculate the intraclass correlation coefficient. The diagnostic ability of the FCSI score to differentiate between dogs with severely compromised (STIF) and compromised (OTHER) stifle function was also investigated using receiver operating characteristic curve analysis, with the optimal cut-off value being defined as the point where the sum of the sensitivity and specificity of the FCSI score reached its maximum value.

Results

The mean FCSI score at baseline was 154.7±60.9 in the STIF group, 59.4±54.3 in the OTHER group and 17.0±22.9 in the CTRL group, respectively. The difference between all groups was significant (P<0.001). Only the STIF group showed a significant (P<0.001) change at both the six-week and 10-week assessments. There were no significant differences between evaluators (P=0.736), and the random-effects model showed that the proportion of total variance within each group was 78.4 per cent due to variation between dogs and 21.6 per cent due to variation between

the evaluators, calculated as an intraclass correlation coefficient of 0.78.

Based on the baseline results, a cut-off point to differentiate between severely compromised and compromised stifle function was set to 120, which had a sensitivity of 83 per cent and specificity of 89 per cent. The area under the receiver operator curve was 0.905, indicating that this cut-off value had excellent ability to discriminate between severely compromised and compromised stifle function.

Interpretation

The findings of this study suggest that the FCSI is a responsive tool for measuring stifle dysfunction, with moderate to good intertester reliability in all dogs and moderate to excellent intertester reliability in dogs with stifle disease. As the weight of the dogs enrolled in this study ranged from 3 kg to 58 kg, it can also be concluded that the responsiveness of the FCSI is not affected by the size of the dog being assessed.

However, it should be noted that some of the FCSI testing battery's items are comparative and give a score only to the weaker of the hindlimbs. As such, dogs with bilateral hindlimb problems may have affected the results of the study. In addition, it was expected that dogs in the STIF and OTHER groups would improve over time because of the physiotherapy they received, but this treatment response was not confirmed by any gold standard measurement. Therefore, it is possible that differences in treatment response may have influenced the results obtained.

Significance of findings

The findings of this study suggest that the FCSI can be safely recommended as a measure to evaluate the level of stifle functionality in dogs with stifle disease.