Rates

```r
library(dplyr)

load("dados_serie_a_2014_2019.RData")

x = list(); y = list(); xy = list()
for(i in 1:N) {
  x[[i]] = c(x1[[i]], x2[[i]])
  y[[i]] = c(y1[[i]], y2[[i]])
  xy[[i]] = paste(x[[i]], y[[i]], sep = "-")
}

placares = c("0-0", "1-0", "0-1", "1-1", "2-0", "0-2", "2-1", "1-2", "2-2")
tables = lapply(xy, table)
last_score = lapply(xy, function(x) x[length(x)])

delta = list()
t = list()
for(i in 1:length(placares)) {
  tmp_delta = NULL
  tmp_t = NULL
  for(k in 1:N) {
    if(placares[i] %in% names(tables[[k]])) {
      tmp_delta[k] = ifelse(last_score[[k]] == placares[i], 0, 1)
      tmp_t[k] = tables[[k]][placares[i]]
    } else {
      tmp_delta[k] = 0
      tmp_t[k] = 0
    }
  }
  delta[[i]] = tmp_delta
  t[[i]] = tmp_t
}

names(delta) = placares
names(t) = placares

rates = NULL
for(i in 1:length(delta)) {
  rates[i] = sum(delta[[i]])/sum(t[[i]])
}
names(rates) = placares
```

```r
# pág 66 do Crowder
sd = NULL
for(i in 1:length(delta)) {
  sd[i] = rates[i]/sqrt(sum(delta[[i]]))
```

```
}

tib = tibble(Rates = rates, SD = sd)
rownames(tib) = placares
knitr::kable(tib)
```

	Rates	SD
0-0	0.0223769	0.0004910
1-0	0.0219503	0.0007301
0-1	0.0239093	0.0009720
1-1	0.0275987	0.0012493
2-0	0.0238186	0.0013506
0-2	0.0249955	0.0021201
2-1	0.0254941	0.0017267
1-2	0.0270593	0.0023203
2-2	0.0292918	0.0032956

```
mat = matrix(NA, nrow = 3, ncol = 3)
rownames(mat) = paste0("x = ", 0:2)
colnames(mat) = paste0("y =  ", 0:2)
for(i in 1:3) {
  for(j in 1:3) {
    mat[i,j] = rates[paste(i-1, j-1, sep = "-")]
  }
}

knitr::kable(mat)
```

	y = 0	y = 1	y = 2
x = 0	0.0223769	0.0239093	0.0249955
x = 1	0.0219503	0.0275987	0.0270593
x = 2	0.0238186	0.0254941	0.0292918