Exercise 3a

R. Harini

18BCE1010

Code:

```
rm(list=ls())


#1

library(MASS)

library(dplyr)


newsurvey=na.omit(survey)


#2

filter(newsurvey, Sex=="Male", W.Hnd=="Left")
```

Output:

```
> #2

> filter(newsurvey, Sex=="Male", W.Hnd=="Left")

  Sex Wr.Hnd NW.Hnd W.Hnd   Fold Pulse    Clap Exer Smoke Height

1 Male   19.5   20.5  Left R on L   104    Left None Regul 177.80

2 Male   19.4   19.2  Left R on L    74   Right Some Never 182.88

3 Male   22.0   21.5  Left R on L    55    Left Freq Never 200.00

4 Male   23.0   22.0  Left L on R    83    Left Some Heavy 193.04

5 Male   19.8   20.0  Left L on R    59   Right Freq Never 180.00

6 Male   20.5   19.5  Left L on R    80   Right Some Occas 182.88

7 Male   17.5   17.0  Left L on R    97 Neither None Never 165.00

      M.I    Age

1 Imperial 17.583

2 Imperial 18.333

3   Metric 18.500
```

4 Imperial 18.917

5 Metric 17.417

6 Imperial 18.667

7 Metric 19.500

#3

filter(newsurvey, Sex=="Female", Clap=="Right")

Output:

> filter(newsurvey, Sex=="Female", Clap=="Right")

	Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke
1	Female	18.0	17.7	Right	L on R	64	Right	Some	Never
2	Female	17.0	17.3	Right	R on L	74	Right	Freq	Never
3	Female	17.0	17.2	Right	L on R	80	Right	Freq	Never
4	Female	17.1	17.5	Right	R on L	72	Right	Freq	Heavy
5	Female	17.8	18.0	Right	R on L	72	Right	Some	Never
6	Female	20.1	20.2	Right	L on R	80	Right	Some	Never
7	Female	18.0	17.6	Right	R on L	60	Right	Some	Occas
8	Female	19.6	19.7	Right	L on R	70	Right	Freq	Never
9	Female	17.0	16.6	Right	R on L	68	Right	Some	Never
10	Female	17.5	17.5	Right	Neither	68	Right	Freq	Heavy
11	Female	17.0	17.6	Right	L on R	76	Right	Some	Never
12	Female	17.7	17.0	Right	R on L	76	Right	Some	Never
13	Female	18.2	18.0	Right	L on R	70	Right	Some	Never
14	Female	18.2	17.5	Right	L on R	70	Right	Some	Never
15	Female	17.5	17.5	Right	R on L	60	Right	Freq	Never
16	Female	17.5	17.3	Right	R on L	72	Right	Freq	Never
17	Female	19.5	18.5	Right	R on L	80	Right	Some	Never
18	Female	17.2	16.7	Right	R on L	75	Right	Freq	Never
19	Female	16.9	16.0	Right	L on R	70	Right	None	Never
20	Female	17.0	16.7	Right	R on L	70	Right	Some	Never
21	Female	18.5	18.0	Right	R on L	92	Right	Freq	Never

22 Female 16.0 16.0 Right R on L 68 Right Freq Never

23 Female 17.5 17.0 Right R on L 74 Right Freq Never

24 Female 16.4 16.5 Right L on R 90 Right Some Never

25 Female 19.5 18.5 Right L on R 68 Right None Never

26 Female 18.0 18.6 Right R on L 84 Right Some Never

27 Female 19.0 18.8 Right R on L 65 Right Freq Never

28 Female 13.0 12.5 Right L on R 80 Right Freq Never

29 Female 16.3 16.2 Right L on R 92 Right Some Regul

30 Female 18.9 19.2 Right L on R 74 Right Some Never

31 Female 19.5 19.2 Right R on L 70 Right Some Never

32 Female 16.5 15.0 Right L on R 65 Right Some Regul

33 Female 17.0 16.5 Right R on L 70 Right Some Never

34 Female 17.5 17.6 Right L on R 79 Right Some Never

35 Female 17.0 17.0 Right L on R 79 Right Some Never

36 Female 17.0 17.6 Right L on R 76 Right Some Never

37 Female 19.1 19.0 Right R on L 80 Right Some Occas

38 Female 16.2 15.8 Right R on L 61 Right Some Occas

39 Female 18.5 18.0 Right Neither 86 Right None Never

40 Female 17.5 17.6 Right L on R 76 Right Some Never

41 Female 18.6 18.6 Right L on R 74 Right Some Never

42 Female 18.0 17.8 Right L on R 68 Right Some Never

43 Female 15.9 16.5 Right R on L 70 Right Freq Never

44 Female 17.5 18.4 Right R on L 88 Right Some Never

45 Female 18.8 18.3 Right R on L 80 Right Some Heavy

46 Female 18.6 18.8 Right L on R 70 Right Freq Regul

47 Female 18.8 18.5 Right R on L 80 Right Some Never

48 Female 18.0 18.0 Right L on R 85 Right Some Never

49 Female 18.5 18.0 Right L on R 88 Right Some Never

50 Female 17.6 17.3 Right R on L 85 Right Freq Never

Height M.I Age

1 172.72 Imperial 21.000

2 157.00 Metric 35.833

3 156.20 Imperial 28.500

4 166.40 Imperial 39.750

5 154.94 Imperial 17.083

6 176.50 Imperial 17.500

7 168.00 Metric 18.417

8 178.00 Metric 17.500

9 171.00 Metric 17.667

10 170.00 Metric 20.667

11 165.00 Metric 23.583

12 167.00 Metric 17.250

13 162.56 Imperial 18.000

14 165.00 Metric 19.667

15 166.50 Metric 23.250

16 175.00 Metric 20.167

17 170.00 Metric 18.250

18 170.18 Imperial 21.167

19 158.00 Metric 20.500

20 159.00 Metric 22.917

21 172.00 Metric 17.500

22 172.72 Imperial 17.667

23 157.00 Metric 18.000

24 152.00 Metric 18.333

25 167.00 Metric 18.667

26 175.00 Metric 17.500

27 172.72 Imperial 17.250

28 165.00 Metric 18.167

29 152.40 Imperial 23.500

30 167.64 Imperial 44.250

31 170.00 Metric 18.167

32 160.02 Imperial 32.750

33 162.56 Imperial 17.167

34 162.50 Metric 17.250

35 163.00 Metric 24.667

36 165.00 Metric 26.500

37 170.00 Metric 19.167

38 167.00 Metric 19.250

39 160.00 Metric 20.167

40 153.50 Metric 17.417

41 160.00 Metric 17.167

42 168.90 Imperial 17.083

43 167.64 Imperial 17.333

44 162.56 Imperial 18.167

45 170.18 Imperial 18.417

46 167.00 Metric 20.333

47 169.00 Metric 18.167

48 165.10 Imperial 17.667

49 160.00 Metric 16.917

50 168.50 Metric 17.750

#4

filter(newsurvey, Exer=="None")

Output:

#4

> filter(newsurvey, Exer=="None")

	Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke
1	Male	19.5	20.5	Left	R on L	104	Left	None	Regul
2	Male	22.5	23.0	Right	R on L	96	Right	None	Never
3	Female	18.0	17.9	Right	R on L	50	Left	None	Never
4	Female	15.5	15.4	Right	R on L	70	Neither	None	Never
5	Male	18.9	19.1	Right	L on R	60	Neither	None	Never
6	Male	19.2	19.6	Right	L on R	80	Right	None	Never

7 Female   16.9   16.0 Right L on R   70   Right None Never

8 Female   19.5   18.5 Right L on R   68   Right None Never

9   Male   18.9   19.1 Right L on R   68   Right None Never

10 Female   17.5   17.1 Right R on L   80   Left None Never

11   Male   18.5   18.5 Right R on L   65   Right None Never

12   Male   17.9   18.4 Right R on L   68   Left None Occas

13 Female   18.5   18.0 Right Neither   86   Right None Never

14   Male   17.5   17.0 Left L on R   97 Neither None Never

  Height   M.I   Age

1 177.80 Imperial 17.583

2 170.00   Metric 19.417

3 165.00   Metric 30.750

4 157.48 Imperial 17.167

5 170.00   Metric 17.750

6 190.50 Imperial 18.167

7 158.00   Metric 20.500

8 167.00   Metric 18.667

9 180.34 Imperial 43.833

10 167.00   Metric 18.417

11 165.00   Metric 18.500

12 176.00   Metric 18.917

13 160.00   Metric 20.167

14 165.00   Metric 19.500

#5

dplyr::select(newsurvey,Sex, Age, W.Hnd)

Output:

#5

> dplyr::select(newsurvey,Sex, Age, W.Hnd)

      Sex   Age W.Hnd

1   Female 18.250 Right

2 Male 17.583 Left

5 Male 23.667 Right

6 Female 21.000 Right

7 Male 18.833 Right

8 Female 35.833 Right

9 Male 19.000 Right

10 Male 22.333 Right

11 Female 28.500 Right

14 Female 17.500 Right

17 Female 19.333 Right

18 Male 18.333 Left

20 Male 17.917 Right

21 Male 17.917 Right

22 Male 18.167 Right

23 Male 17.833 Right

24 Male 18.250 Right

27 Male 17.500 Right

28 Male 18.083 Right

30 Male 19.250 Right

32 Male 17.500 Right

33 Female 39.750 Right

34 Male 17.167 Right

36 Male 18.000 Right

38 Male 17.917 Right

39 Male 35.500 Right

42 Female 17.083 Right

44 Female 17.500 Right

47 Male 18.917 Right

48 Male 19.417 Right

49 Female 18.417 Right

50 Female 30.750 Right

51 Male 18.500 Left

52 Male 17.500 Right

53 Male 18.333 Right

54 Male 17.417 Right

55 Male 20.000 Right

57 Female 17.167 Right

59 Male 17.667 Right

61 Male 20.333 Right

62 Female 17.333 Right

63 Female 17.500 Right

65 Female 18.583 Right

71 Female 17.583 Right

73 Female 17.667 Right

74 Female 17.417 Right

75 Female 17.750 Right

76 Female 20.667 Right

77 Female 23.583 Right

79 Female 17.083 Right

82 Male 20.167 Right

85 Male 17.167 Right

86 Female 17.250 Right

87 Female 18.000 Right

88 Female 18.750 Right

89 Male 21.583 Right

91 Male 19.667 Right

93 Female 19.667 Right

95 Male 22.833 Right

97 Male 19.417 Right

98 Female 23.250 Right

100 Female 19.083 Right

102 Male 17.750 Right

104 Female 20.167 Right

105 Female 17.667 Right

106 Female 18.250 Right

109 Male 18.583 Right

110 Male 17.750 Right

111 Female 24.167 Right

112 Male 18.167 Right

113 Female 21.167 Right

114 Male 17.917 Right

115 Female 17.417 Right

116 Female 20.500 Right

117 Female 22.917 Right

118 Male 18.917 Left

119 Female 18.917 Left

120 Male 20.083 Right

122 Male 18.250 Right

123 Female 17.500 Right

124 Male 17.417 Left

125 Male 21.000 Right

127 Female 17.667 Right

128 Male 18.083 Right

129 Female 18.000 Right

130 Female 18.333 Right

131 Male 20.000 Right

132 Male 18.750 Right

134 Female 18.500 Left

135 Male 18.417 Right

136 Male 19.167 Right

138 Male 19.333 Right

140 Female 18.667 Right

141 Female 17.500 Right

143 Female 17.250 Right

144 Male 19.000 Right

145 Female 19.167 Left

146 Male 19.000 Right

147 Male 23.000 Right

148 Male 32.667 Right

149 Female 20.000 Right

150 Female 20.167 Right

151 Male 25.500 Right

152 Female 18.167 Right

153 Female 23.500 Right

154 Male 70.417 Right

155 Male 43.833 Right

156 Male 23.583 Right

158 Female 44.250 Right

160 Male 17.917 Right

161 Female 18.417 Right

163 Male 17.500 Right

164 Female 29.083 Right

166 Female 18.500 Right

167 Female 18.167 Right

168 Female 32.750 Right

170 Male 17.333 Right

172 Male 18.667 Left

174 Female 18.667 Right

175 Female 17.750 Right

176 Female 17.250 Left

177 Male 36.583 Right

178 Female 23.083 Right

180 Female 17.167 Right

181 Male 23.417 Right

182 Female 17.083 Right

183 Female 17.250 Right

184 Male 23.833 Right

185 Male 18.750 Right

186 Male 21.167 Right

187 Female 24.667 Right

188 Male 18.500 Right

189 Male 20.333 Right

190 Male 20.083 Right

191 Male 18.917 Right

192 Male 27.333 Right

193 Male 18.917 Right

194 Female 17.250 Right

196 Female 26.500 Right

197 Female 17.000 Right

198 Male 17.167 Right

199 Female 19.167 Right

200 Female 17.500 Right

201 Female 19.250 Right

202 Male 21.333 Right

204 Female 20.167 Right

205 Male 18.667 Right

206 Female 17.083 Right

207 Female 17.417 Right

208 Male 18.583 Right

209 Male 19.500 Left

211 Female 17.167 Right

212 Female 17.250 Left

214 Male 20.417 Right

215 Female 17.083 Right

218 Male 19.333 Right

220 Male 18.917 Right

222 Female 17.333 Right

223 Female 18.167 Right

227 Female 18.417 Right

228 Male 17.417 Right

229 Female 20.333 Right

230 Male 19.333 Right

231 Female 18.167 Right

233 Female 17.667 Right

234 Female 16.917 Right

236 Male 17.167 Right

237 Female 17.750 Right

#6

```
newsurvey%>%
 filter(W.Hnd=="Left", Sex=="Female")%>%
 dplyr::select(Age, Pulse, Wr.Hnd)
```

Output:

#6

```
> newsurvey%>%
+   filter(W.Hnd=="Left", Sex=="Female")%>%
+   dplyr::select(Age, Pulse, Wr.Hnd)
    Age Pulse Wr.Hnd
1 18.917   100   18.5
2 18.500    80   15.4
3 19.167    68   20.0
4 17.250   104   19.0
5 17.250    83   17.5
```

#7

```
arrange(newsurvey, desc(Height))%>%filter(Sex=="Male", W.Hnd=="Left")
```

Output:

#7

```
> arrange(newsurvey, desc(Height))%>%filter(Sex=="Male", W.Hnd=="Left")
  Sex Wr.Hnd NW.Hnd W.Hnd   Fold Pulse    Clap Exer Smoke Height
1 Male   22.0   21.5  Left R on L    55    Left Freq Never 200.00
2 Male   23.0   22.0  Left L on R    83    Left Some Heavy 193.04
3 Male   19.4   19.2  Left R on L    74   Right Some Never 182.88
4 Male   20.5   19.5  Left L on R    80   Right Some Occas 182.88
5 Male   19.8   20.0  Left L on R    59   Right Freq Never 180.00
6 Male   19.5   20.5  Left R on L   104    Left None Regul 177.80
7 Male   17.5   17.0  Left L on R    97 Neither None Never 165.00
      M.I    Age
1   Metric 18.500
2 Imperial 18.917
3 Imperial 18.333
4 Imperial 18.667
5   Metric 17.417
6 Imperial 17.583
7   Metric 19.500
```

#8

```
mutate(newsurvey, Diff=Wr.Hnd-NW.Hnd)%>%
  dplyr::select(Sex,Wr.Hnd, NW.Hnd, Diff)
```

Output:

#8

```
> mutate(newsurvey, Diff=Wr.Hnd-NW.Hnd)%>%
+   dplyr::select(Sex,Wr.Hnd, NW.Hnd, Diff)
      Sex Wr.Hnd NW.Hnd Diff
1   Female   18.5   18.0  0.5
2     Male   19.5   20.5 -1.0
3     Male   20.0   20.0  0.0
```

4 Female 18.0 17.7 0.3

5 Male 17.7 17.7 0.0

6 Female 17.0 17.3 -0.3

7 Male 20.0 19.5 0.5

8 Male 18.5 18.5 0.0

9 Female 17.0 17.2 -0.2

10 Female 19.5 20.2 -0.7

11 Female 18.0 18.0 0.0

12 Male 19.4 19.2 0.2

13 Male 21.0 20.9 0.1

14 Male 21.5 22.0 -0.5

15 Male 20.1 20.7 -0.6

16 Male 18.5 18.0 0.5

17 Male 21.5 21.2 0.3

18 Male 21.0 20.7 0.3

19 Male 20.8 21.4 -0.6

20 Male 19.5 19.5 0.0

21 Male 18.8 18.2 0.6

22 Female 17.1 17.5 -0.4

23 Male 20.1 20.0 0.1

24 Male 22.2 21.0 1.2

25 Male 19.4 18.5 0.9

26 Male 22.0 22.0 0.0

27 Female 17.8 18.0 -0.2

28 Female 20.1 20.2 -0.1

29 Male 23.2 22.7 0.5

30 Male 22.5 23.0 -0.5

31 Female 18.0 17.6 0.4

32 Female 18.0 17.9 0.1

33 Male 22.0 21.5 0.5

34 Male 20.5 20.0 0.5

35 Male 17.0 18.0 -1.0

36 Male 20.5 19.5 1.0

37 Male 22.5 22.5 0.0

38 Female 15.5 15.4 0.1

39 Male 19.5 19.0 0.5

40 Male 22.8 23.2 -0.4

41 Female 18.5 18.2 0.3

42 Female 19.6 19.7 -0.1

43 Female 17.3 18.0 -0.7

44 Female 18.0 17.5 0.5

45 Female 17.0 16.6 0.4

46 Female 16.5 17.0 -0.5

47 Female 15.6 15.8 -0.2

48 Female 17.5 17.5 0.0

49 Female 17.0 17.6 -0.6

50 Female 18.3 18.5 -0.2

51 Male 19.2 18.9 0.3

52 Male 23.0 23.5 -0.5

53 Female 17.7 17.0 0.7

54 Female 18.2 18.0 0.2

55 Female 18.3 18.5 -0.2

56 Male 18.0 18.0 0.0

57 Male 20.5 20.0 0.5

58 Female 18.2 17.5 0.7

59 Male 21.3 20.8 0.5

60 Male 20.0 19.5 0.5

61 Female 17.5 17.5 0.0

62 Female 19.4 19.6 -0.2

63 Male 18.9 19.1 -0.2

64 Female 17.5 17.3 0.2

65 Female 17.5 17.0 0.5

66 Female 19.5 18.5 1.0

67 Male 17.5 17.5 0.0

68 Male 19.7 20.1 -0.4

69 Female 18.5 18.5 0.0

70 Male 19.2 19.6 -0.4

71 Female 17.2 16.7 0.5

72 Male 20.5 21.0 -0.5

73 Female 16.0 15.5 0.5

74 Female 16.9 16.0 0.9

75 Female 17.0 16.7 0.3

76 Male 23.0 22.0 1.0

77 Female 18.5 18.0 0.5

78 Male 21.0 20.4 0.6

79 Male 22.5 22.5 0.0

80 Female 18.5 18.0 0.5

81 Male 19.8 20.0 -0.2

82 Male 18.5 18.1 0.4

83 Female 16.0 16.0 0.0

84 Male 18.8 19.1 -0.3

85 Female 17.5 17.0 0.5

86 Female 16.4 16.5 -0.1

87 Male 22.0 21.5 0.5

88 Male 19.0 19.5 -0.5

89 Female 15.4 16.4 -1.0

90 Male 17.9 17.8 0.1

91 Male 23.1 22.5 0.6

92 Male 22.0 22.0 0.0

93 Female 19.5 18.5 1.0

94 Female 18.0 18.6 -0.6

95 Female 19.0 18.8 0.2

96 Male 21.4 21.0 0.4

97 Female 20.0 19.5 0.5

98 Male 18.5 18.5 0.0

99 Male 22.5 22.6 -0.1

100 Male 19.5 20.2 -0.7

101 Female 18.0 18.0 0.0

102 Female 18.0 18.5 -0.5

103 Male 21.8 22.3 -0.5

104 Female 13.0 12.5 0.5

105 Female 16.3 16.2 0.1

106 Male 21.5 21.6 -0.1

107 Male 18.9 19.1 -0.2

108 Male 20.5 20.0 0.5

109 Female 18.9 19.2 -0.3

110 Male 18.5 19.0 -0.5

111 Female 17.5 17.1 0.4

112 Male 20.2 20.3 -0.1

113 Female 16.5 16.9 -0.4

114 Female 17.6 17.2 0.4

115 Female 19.5 19.2 0.3

116 Female 16.5 15.0 1.5

117 Male 19.0 18.5 0.5

118 Male 20.5 19.5 1.0

119 Female 18.0 17.5 0.5

120 Female 17.5 18.0 -0.5

121 Female 19.0 18.5 0.5

122 Male 20.5 20.5 0.0

123 Female 16.7 17.0 -0.3

124 Female 17.0 16.5 0.5

125 Male 19.0 19.5 -0.5

126 Female 14.0 13.5 0.5

127 Female 17.5 17.6 -0.1

128	Male	18.5	19.0	-0.5
129	Male	18.0	18.5	-0.5
130	Male	20.5	20.7	-0.2
131	Female	17.0	17.0	0.0
132	Male	18.5	18.5	0.0
133	Male	18.0	18.5	-0.5
134	Male	18.5	18.0	0.5
135	Male	20.0	19.5	0.5
136	Male	22.0	22.5	-0.5
137	Male	17.9	18.4	-0.5
138	Female	17.6	17.8	-0.2
139	Female	17.0	17.6	-0.6
140	Female	15.0	13.0	2.0
141	Male	16.0	15.5	0.5
142	Female	19.1	19.0	0.1
143	Female	17.5	16.5	1.0
144	Female	16.2	15.8	0.4
145	Male	21.0	21.0	0.0
146	Female	18.5	18.0	0.5
147	Male	17.0	17.5	-0.5
148	Female	17.5	17.0	0.5
149	Female	17.5	17.6	-0.1
150	Male	17.5	17.6	-0.1
151	Male	17.5	17.0	0.5
152	Female	18.6	18.6	0.0
153	Female	17.5	17.5	0.0
154	Male	17.0	17.5	-0.5
155	Female	18.0	17.8	0.2
156	Male	18.2	19.8	-1.6
157	Male	23.2	23.2	0.0
158	Female	15.9	16.5	-0.6

159 Female 17.5 18.4 -0.9

160 Female 18.8 18.3 0.5

161 Male 20.0 19.8 0.2

162 Female 18.6 18.8 -0.2

163 Male 18.6 19.6 -1.0

164 Female 18.8 18.5 0.3

165 Female 18.0 18.0 0.0

166 Female 18.5 18.0 0.5

167 Male 21.0 21.5 -0.5

168 Female 17.6 17.3 0.3

#9

```
newsurvey%>%
 filter(W.Hnd=="Left")%>%
 group_by(Sex)%>%
 summarise(mean(Wr.Hnd))
```

Output:

```
> #9
> newsurvey%>%
+  filter(W.Hnd=="Left")%>%
+  group_by(Sex)%>%
+  summarise(mean(Wr.Hnd))
`summarise()` ungrouping output (override with `.groups` argument)
# A tibble: 2 x 2
  Sex    `mean(Wr.Hnd)`
  <fct>          <dbl>
1 Female          18.1
2 Male            20.2
```

#10

```
newsurvey%>%
```

```
  filter(Sex=="Male")%>%
  group_by(W.Hnd)%>%
  summarise(max(Pulse))
```

Output:

```
#10
> newsurvey%>%
+   filter(Sex=="Male")%>%
+   group_by(W.Hnd)%>%
+   summarise(max(Pulse))
`summarise()` ungrouping output (override with `.groups` argument)
# A tibble: 2 x 2
  W.Hnd `max(Pulse)`
  <fct>       <int>
1 Left          104
2 Right         100
```